# COMPUTERWORLD

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# Backs to the wall at Hutton MIS

Shearson expected to scrap hardware, dismiss staff as part of merger plan

BY ALAN ALPER NEW YORK - E. F. Hutton & Co.'s distributed computing ar-chitecture may be dismembered and a large number of its in

on systems employees dis-sed as a result of Shearson man Brothers, Inc.'s proposed \$1 billion acquisition, ac-cording to sources close to both

exploiting IBM's reported ad-

 Build a System/36 "applications platform" on OS/2, but will focus on IBM's Systems Applica-

BY STANLEY GIBSON

As a computer, it may be a heck

tion Architecture to con

PS/2s to larger systa



pessoophy, pested, is unlike te Hutton's de m. known as BIPS, which ne antilocal processing services to ex of the firm's 400 branches.

"I don't think they'll keep IPS]," said a high-level Hutton executive who asked to re-

lack Owens a t of it ed that the merged con id not need all of the co information systems staff mem-

8000 series system ca performing about 22 m ructions per second.
The official also said DEC is

The next major VAX releas carries the code name "Pola Star," according to Bill Dem mer, vice-president of DEC's Mid-Range Systems Business Group in Boxboro, Mass. He said the release will roughly double the performance of DEC's cur-rent high-end VAX 8800, which is generally rated at about 12 MIPS. Demmer made his com-ments during Dexpo West '87, a

# Lowe sees varied Micro Channel role

BY ED SCANNELL

WHITE PLAINS NY ... IRM is piecing together a technical workstation strategy that will eventually yield multiuser versions of the OS/2 operating sys-tem on both IBM RT Personal ters and high-end Personal System/2s, according to William C. Lowe, president of the company's Entry Syste

This strategy, which will largely center on Unix, calls for plementation of IBM's Micro Channel architecture on the RT PC. In a recent interview

with Computerworld, Lowe also said the company plans to do the following: • Create bridges where necessary to better tie Unix with IBM's Systems Network Archi-

• Implement the Micro Channel architecture bus on "the entire (PS/2) product line" as well as on a broad range of multiuser sys-

• Make OS/2 Extended Edit run better on PS/2 systems by of a printer. But that beats be-ing a bost anchor. Some 28 years after it was first shinned and 21 rs after it was BM 1401 is still being run by several machine can be pro-grammed only in obscure languages, was dropped from IBM maintenance

in 1981 and has a maximum memory IBM's 1401 still up and puncking ecity of a min

cule 16K bytes, a community of price, was the first to be avail-users is putting the machine to able to a wide range of users, productive use.

# Mainframe VAX in '88 BY JAMES A. MARTIN

DEC exec:

ANAHEIM, Calif. — A Digital Equipment Corp. official last week confirmed reports that the

exploring ways to extend the VAX architecture beyond its current 32-bit limit, thereby

ment teams, the company re-portedly has been working on a

## The 16K of memory is fine, but the price of punch cards is going through the roof

the two to

In fact, several enthusiasti-cally sing the processor's

The 1401 was the third IBM er to use tra

ternational Data Corp. Hart was an IBM salesman when the 1401 was introduced and says be sold several of the mach

life — some 12,484 were sold, accord-ing to IDC — be-fore it was eclipsed by the la IBM 360 fa

You have to be to be of that ag

president of Da Computer Management, Inc. located in Dallas. McCoy pro

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SECOND CLASS

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or ever will be, anoth-

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1401."

for mid-range systems.

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# Hold that lawsuit!

Sybase says illegal copying charge a mistake

BY ROSEMARY HAMILTON

A 2-week-old legal scuffle be een Oracle Corp. and Syl Inc. came to an abrupt end last week with Sybase admitting it had wrongly accused Oracle of il-legally using and copying its soft-ware. It seemed like a David and Goliath story gone wrong.

Last month, Sybase, which got off to a fast start this year in

the relational data base manage-ment field, took on Oracle, which has rapidly become a major force in this market. Oracle raised in \$131.3 million in revenue for its 1987 fiscal year, a 137% in-crease from last year's \$55.4

milton.

The smaller Sybase ended up in the awkward position of with-drawing its complaint, leaving it in an even shaker relationship.

th its much bigger rival. In the lawsuit, filed Nov. 23 in trict Court in San Fran-U.S. District Court in San rema-cisco, Sybase asserted that Ora-cie had wrongfully used and cop-ied its software, the Dataserver and the Data Toolset, which were designed for on-line transbetween the two firms, it was learned that Oracle did not have the Sybase software, attorneys for both firms said last week.

Tobles turned The situation for Sybase al

went from bad to worse when the negotistions revealed that a copy of the Oracle data base inagement system was appr thy at Sybase. Raymo Ocampo, assistant legal cou for Oracle, said it first appe that Sybase may have engage

that the software in question beionged to a Sybase employee who had previously worked for Oracle. "There is no evidence that the software was obtained illegally or that it had been used," said Peter Courture, a partner at Wilson, Soneini, Goodrich & Rosati, the firm rep-

Attorneys for both companies said that each has agreed to re-turn any of the other's software that might have been in its possession, even though neithe firm claimed to have had the oth

# United data scrambled in O'Hare terminal fire

BY JEAN S. BOZMAN

CHICAGO - A small rubi fire undernesth the concourse at United Airlines' O'Hare Internaneed Airport terminal two seeks ago damaged voice and its lines enough to cancel 175 ghts and strand thousands of seengers, United said last

"The reservation people bad to handle everything manually, and they really couldn't keep up with the volume of work normal-ly handled by our comment led by our computer sys-United spokesman Joe

On a normal day, more than 70,000 people pass through Un-ited's terminals, arriving or de-parting on one of 800 flights. In-

Thousaness or circuits ser The fire, one of three that broke out on the evening of Dec. 3, be-gan in an out-of-sight area sear the terminal's baggage handling facility. By the time it was dis-covered, it had burned through

circuits. The damage interrup ed service at pay phones and re ation stations, as well as cking out data to most Unit-

knocking out data to most United reservation CRTs at O'Hare.
"The cables were just a mass of copper and fused insulation," and Illinois Bell spokesman Richard Hal. "But even though they were in terrible shape, some of the data lines to the United Apollo reservation system kept working."
The problem was a well as the problem was a well-as the problem.

The problem worsened the following morning, when tele-phone repair crews started to re-place the damaged lines. "In try-ing to repair the charred cables, he wires were cut," Hopkins said. He declined comment on whether United was internally investigating the fires, which estigating the fires, which re initially considered suspi-us by the Chicago Fire De-tment. The fire department

ous or not, the fires at ited's terminal and the sum flooding of other Chicago puter and com-



# Airlines face Senate turbulence

Reservation systems cited for anticompetitive, anticonsumer potential

BY MITCH BETTS

Sen. Howard M. Metzenbaum (D-Ohio) warned major airlines last week that they must resolve controversies over their com-

ine-owned reservation is "may be a potent tool of ner deception and unfair tition," Metambaum said

Several people critical of the way American Airlines and Unit-ed Airlines have used their sys-tems for competitive advantage urged Congress to require dives-titure by forcing the airlines to sell their reservation systems to The critics included consum-

er activists, who said the sys-tems are biased toward their owners, small airlines, which de-cried the high fees they must pay to be listed on the reservation tems; and travel agents, who urage them from switching

RAVEL agencies argued that American and United impose onerous contract provisions.

they can benefit from the incretal revenue that can be created by distorting traveler choices," testified Michael E.

On the other side of the de-bate, executives who are in charge of American's Sabre sys-tem and United's Apollo system

said there is no need for additionregulation or divestiture, would rob them of their heavy investments in the tech-

"For the past several years, carriers that chose to invest their resources elsewhere have en attempting to use the legislative process and the courts to deprive American of the fruits of ccess," testified Michael A. cleman, president of Sabre Travel Information Network, a rision of American

Travel agencies, the front line users of the systems, argued that American and United inpose onerous contract provisions intended to prevent them from converting to another sys-

use American and Unit ed together control more than 70% of the market, they can imact terms — such as uncial penalties for witching systems — on a "take-it-or-leave-it" basis, ac-

cording to a representative for the American Society of Travel

The group urged the U.S. De-partment of Transportation or ess to restrain the major airlines' market power by estab-lishing a standard set of contract terms that would eliminate the

But officials from American and United said the contract terms are necessary to defend against Texas Air's recent efforts to steal customers away. The so-called conversion wars have landed in court because of disputes over breaches of con-tracts [CW, Nov. 30].

Northwest Airlines and Tex-as Air's System One Corp. subas Air's System One Corp. sub-sidiary urged Congress to make it easier for travel agents to switch vendors, while America West Airlines and the Consumer Federation of America called for

raphics module is one of three additions design

# improves portability

SAS widens PC line,

BY DOUGLAS BARNEY

CARY, N.C. - For the first graphics, data entry and ons development tools will be available on personal computers from SAS Institute, Inc., which today is scheduled to announce a new version of its SAS System for Personal Com-

While SAS is still largely a rveyor of host-based applica-ns, the new PC version of the ware is part of the firm's all strategy of bringing its ensive personal computers.
With OS/2 and 386 ma

nes, we will see a lot of corpo rate computing that is going to be done on PCs rather than a mainframe, "SAS President James Goodnight said. "Our us-ers have asked on to bring SAS, in its entirety, to the PC." There are currently more

than 270,000 licensed PC work-station users, according to SAS.

Three free modules The new version of the PC soft ware, set to ship later this month, includes three new mod-ules: SAS/Graph, for graphics; SAS/FSP, for data entry, editing, querying and letter writing; and SAS/AF, for applications denent. The new version will wided free to licensed SAS

the features of SAS/Graph for es and is aimed at sophisticated graphics applica-tions. It includes the ability to hics; scatter and contour sts; and surface, block and

am maps. SAS/FSP is billed as a "com te information processing tem" for data entry, oueryediting and letter writing. With the product, users can de-

sign data entry screens, work with data and create links to data se management systems such IBM's DB2, the company said. SAS/AF is an applications deat system ystem with menu res. SAS said the

duct can create fill-in-the-One user applauded the ove. "The use of a personal orkstation to do graphics or en-nce your ability to do data en-

try or develop applications that frame is the direction to go in," said Mike Schmidt, manager of ems planning and adminis-ion for Moody's Investors rice, Inc. in New York.

We would like to have an enseparate from a mainframe, where a programmer cannot ac-cidentally write an application or test an application during pro-duction hours," Schmidt said.

But for some uses, the PC is not the answer, according to SAS. "The mainframe will have

a larger variety of graphics output devices connected to it, such as the more expensive plotters and cameras," Goodnight explained. "Also, that is where the large corporate data bases an so it will make sense to keep SAS on the mainframe for the really large jobs, such as overnig plotting and camera-ready art.

The portability of C Computers has been written in C to improve portability to other ctures, SAS said. This new PC software will serve as the basis for the firm's future st products, Goodnight said. m represents a ningle

system that will run the same on all machines SAS software currently supports. SAS enhanced its graphics

data entry and applications tools as it moved them to the PC. "We have added the ability to use a uing system to menu each of the procedures in the graphics area," Goodnight said. He add-

ed, however, that the product is still aimed at sophisticated users. "It is still predominantly a main-It is still predominantly a main-rame graphics tool that has een brought down to the PC." 'It is still pred SAS also provides a con uct and its host applications through SAS/Rterm, a terminal sulation program. Existing PC me

also been enhanced. The base SAS software features expanded ta management tools. The software's statistical component, SAS/Stat, will include new ocedures for analysis.
And SAS/IML, an interactive

trix facility for statistics. mathematics and engineering, will include 10 additional time-series functions and eight additional matrix functions, some

ear programs. The SAS System for Personal Computers is licensed on a year-ly basis. Prices range from \$495 COMPUTERWORLD

Alm J. Ryon Senior Edito Geora Rifes

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Copy Editor Mary Green Martin E. Ru Shuren Bake

a Albert Con Betts, Cornes

Ois Long, M

S. Roman, Cor.

IDG News Servi



THIS GIVES YOU A ROUGH IDEA OF HOW FAST SYNCSORT OS DOES ITS SORTING. It's only a rough idea, granted.

But then, how do we convey the speed of SyncSort OS? A sort so fast it results in dramatic reductions in the use of your MVS or MVS XA computer resources? (Meaning CPU Time, EXCPs, disk work space and the like.)

Then, to compound matters, how do we tell you that we have features to make any programmer more productive?

And that our service is almost as fast as our sorts? (Over 85% of all problems are cleared up within 24 hours.)

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We'll whoosh right over.

SYNCSOFT
THE BEST OF SORTS."

We're impatient,

seph Brophy, senior vice-presi-dent of information systems and

data processing at Travelers. "We think [OS/2] is the right di

nection, but we want OS/2 Ex-

tended and all the tools and util-

ties so we can get it into the

op," said Ed Ginorio, manager

sking Ridge, N.J. But Ginorio

Users who did not chose to

of customer computing support

said he is in no rush to purchase

wait, though, said OS/2 has met

The technical support spe-cialist said it took less than a halfhour to install the operating sys-tem onto his IBM Personal rstem/2 Model 80. OS/2 ar-

rived on four 1.4M-byte 3% in.

"It has glitzy color screens

The program, the early users

production environment We're very much an IBM

Dun & Brad

eir expectations

# First OS/2 users want more

Remains programmer's plaything until strategic pieces fall into place

BY ALAN J. RYAN

Soon after IBM dusted the cou try with 20,000 copies of its long-awaited OS/2 Standard Edi-Version 1.0. early opers said egic pinces.

ome come ek said OS/2 will be only rginally useful — more of a sgrammer's plaything — until ther releases, including comcations capabilities in the cal user interface of the Pres tica user interrace of the Presen-tation Manager, become avail-able. The Extended Edition Version 1.0 will ship in July 1988, the Standard Edition with the Presentation Manager will 1988, the Standard Entron with the Presentation Manger will ship in October 1968 and the Ex-tended Edition with the Presen-tation Manager will ship in No-vember 1968, according to IBM. IBM began shipping the Stan-dard Edition Dec. 4, but many

o placed orders for it said they d not received it as of Dec. 11. Early users said OS/2 is easy to install, lives up to IBM': ses and has few problems. "I think OS/2 is going to be-come the standard environment for our intelligent workstations" over time, said Henwell Chou, a second vice-president with now. The lack of comm Travelers Insurance Co. in Harttions in the Standard Editi During the next six months, ough, Chou said he sees little

for the operating system. We'll be testing it and probably trying to develop software for it." he said.

Not for end users yet A technical support specialist at a Fortune 100 company, who reed a production copy of OS/2 late last week, said only proers need OS/2 at the

If I were running a busi I'd have my heavy PC support groups running (OS/2) and using the compatibility box (the mode designed to preserve the user's designed to preserve the user's investment in existing software] just to become familiar with it. But there's no reason for end us-ers to get involved. There are no applications for it," the technical ort specialist said.

One user at a major nat bank, who has been working with a beta-test version of OS/2, said that while OS/2 "definitely does multitasking and definitely that step you through the disk swapping and installation process and requires no reference to the manual," be said. wed our memory straints, we don't have the Exed Edition, so we have to said, requires a mini 1.5M bytes of memory. ck away from our PC LAN for

"It would not install on the 1M-byte PS/2 Model 60," said Ed Tolson, president of software developer Softlogic Solutions, Inc. in Manchester, N.H. 'Assuming you're going to run the compatibility box at all, tions in the Standard Edition has plus some protected-mode app ted its practical usefulness cations, it's more reaso

have 2.5M bytes to 3M bytes of memory," said Adrian King, di-rector of product marketing for perating systems at Microsoft orp., which co-developed OS/2. Once installed, moving IBM PC- or Microsoft MS-DOS data, models and custom applications to ported OS/2 programs work

in much the name way as setting up a new DOS machine.

The user would back up his disk, install OS/2 on the disk, copy data files back in and install the applications according to their instructions, King said. A main feature of OS/2 is its

ability to run DOS files, but the users and Microsoft said not all DOS files will run under the com-patibility mode of OS/2.

King conceded that th ome programs that will not work exactly the same way in the mustibility box of OS/2 as they compatibility box of OS/2 as they do under DOS. Essentive Editor Paul Gil-lin, Senior Editor Douglas Bar-ney and West Coast Manager Kathy Chin Leong contributed to this report.

## So where is it?

tep right up. Get your OS/2 Standard Edition 1.0 here."
Sound familiar? Not likely, IBM shipped 20,000
copies of OS/2 on Dec. 4, but few have surfaced.
Several large dealers contacted last Thursday said
they had not received the new operating system but were expecting it. A spokerswoman at Computerland Corp. said OS/2

was due to arrive in the store's warehouses late last week and would have to be inventoried before being sent to dealers. She said it could be on dealer shelves by Dec. 16. Builtiessland, Inc. said anyone seeking a copy will probably find it at Businessland by Dec. 21. Ira Lubert, president of Computors Systems, Inc. in Cherry Hill, N.J., said his customers may find OS/2 in his store later this month.

ALANJ RYAN

#### Lowe FROM PACE 1

If we are going to build a series of workstation products that use both the Intel (Coro I-based PS/2s and the reduced instruc-tion set computing-based RT [PC] products, we would do a better job of it if we have them

nized together," Lowe said. Demonstrating the flexibility of the high-end PS/2s, Lowe said, IBM will eventually support the systems in four different configurations through the AIX oper tem, as a System/36 platform, through a multiuser version of OS/2 and as a file server.

The RT PC reportedly will be ed as a file server and mul tiuser system and will run a multiuser version of OS/2. The key to tving all these configu together is SAA, Lowe said.

Turning to the potential of the Micro Channel architecture, Lowe said many people underes-timate its abilities, adding that it will be an important part of the company's strategy throughout its entire family of products.

"Through time, you'll see the
Micro Channel on quite a few implementations. For the same n it makes sense for [the RT PC people to talk of the respent on the Micro Channel, it will make sense for other people to interface with the I/O devices that we do for the PS/2. [And through multiple imple-mentations], it also makes the job of SAA easier. With the help of the Mi-

o Channel architecture, IBM will be better able to run OS/2 Extended Edition on its systems that will compatible makers by exploiting the advantages they have in communications, Lowe said. He added that the area in which many inferior clone makers come up short is asynchronous interrupts.

"In a comm rnoment where you get a lot of asynchronous interrupts, we can really take advantage of the Mi-Channel's capabilities,

ent to Unix marks a departure from its lukewarm support in the past. Unix was previously provided as an "accommodation" to customers who felt the operating system was critical to running their businesses, Lowe said. During the nast year, however. an increasing number of custom-ers want Unix from IBM, Lowe said, adding that IBM centered much of its workstation strategy



for the RT PC and PS/2 around

soite having OS/2 on the RT PC and AIX on the PS/2s, IBM intends to establish a consistent user interface across its workstation line. Lowe said.

Multistep process
He said this process will be done in several stages. The first step is outting the AIX/X Windows interface on both the PS/2 and RT PC. The second step inv putting OS/2 on the RT PC, which Lowe said gives that sys-"all the attributes of the

"So a likely thing to do is to take the steps to make AIX/X Windows conform," he said. "But we aren't going to do things that make it difficult to port Unix applications In cases where there is an un

compromising conflict be-tween Unix and SAA, IBM will build the ne bridges for developers to port over their applica-tions, said Andrew Heller vice-president and general manager of IBM's Ad-vanced Engineering Sys-tems Division. In most

cases, he said, it is tech cally feasible to move peonie from one environ to another within the system without users realiz ing they have or While the RT PC line and high-end PS/2s reportedly will be running both Unix and mul-

ser versions of OS/2 in the next few years, Lowe said then will be little overlap. 'In a couple of years, we'll obsbly have PS/2s that are higher performance than today's RT (PCs). But we expect to have rformance than today's products in the RT IPCI family.

at that point in time, which are substantially faster than the Intel-based products," he said. The fact that IBM considers the RT PC an important Unix platform in the future comes as a surprise to many observers who believe the system has sold poor ly since its introduction in Janu

ary 1986. Heller admitted the original RT PC did not have the necessary software and em sion capabilities to make it suc

# PS/2 BIOS set for June

IRVINE, Calif. - Users can pect systems compatible with IBM's Micro Channel-based sonal System/2s to be avaable by June, according to offi-Corp. and Phoenix Technologies

The companies last week signed a joint development ent to creat a series of read-only memory BIOS prod-acts. In combination with Western Digital's chip sets and board ed in Octo the product will allow OEMs to deliver systems compatible with the PS/2 Models 25 and 30, both of which use the IBM Personal Computer AT bus, and the Micro Channel-based Models 50, 60

in the BIOS products from oEMs, according to Bill Franks, vice-president and general man-ager of Western Digital's Strate-gic Products Business Units. IBM has said it will not licen

design patents on the Micro Channel but will offer utility patents, providing vendors with the tools necessary to create a work

# PS/2 legal web still tangles vendors

BY JULIE PITTA

SANTA CLARA, Calif. - Leg issues surrounding certain mod-els of IBM's Personal System/2

still unclear more than eight months after the line's introduc-

mputer AT bus.
"I'm appalled that it's eight
oths down the road and the
tustry still doesn't have a clear

#### er of microco

troduce such a product. Gordon Campbell, chair chief executive office

d chief executive ips and Technolo inps and rechnologies, Inc., id that he is not "aware of a agle PC-compatible manufac-rer" that is not looking to me the PS/2 line. Campbell said manufacturer gal fears will delay PS/2-con

iegas rears was oeary FS/2-com-patible introductions but not prevent them. Chips and Tech-nologies has been in discussions with IBM's legal department for several months, he added. Panelists said IBM has been

#### CORRECTIONS

rp. desktop personal comp hard disk drives of Data Corp. wile CDC would like t

mpaq is using have a capacity ging from 51M to 182M es, CDC said.

adept at tying the Micro Channel and the OS/2 operating system, jointly developed by IBM and Mi-



# Netware OS/2 support revealed

BY PATRICIA KEEFE

NEW YORK - Novell, Inc. last week outlined a two-pronged strategy to support OS/2 on a server under Novell's dual approach will provide users full compatibility with IBM and Microsoft Corp.'s OS/2 without affecting the per-

rporate development.
In a briefing here, Novell set a
rst-quarter delivery date for rting conventional distribdications and external used applications under OS/2. The company also said it would support the OS/2 applica-tions program interface, as de-fined by IBM, with its Netware

estive. ovell said it will deliver sup port for internal server-base applications running under OS/2 as well as support for OS/2 Ex-

tions Coprocessor board in the fourth quarter of 1988. Also planned is support for IBM's Advanced Program-to-Program Communications peer-to-peer communications protocol

With these an eveil attempted to puncture what it called the myth that the firm cannot support OS/2 on the network without licensing OS/2 and Microsoft's OS/2 LAN Man-

er. Burton said developers will

not have to choose between Netware and OS/2. "It's true lows OS/2-based workstatic to coexist with DOS worksta-tions and communicate with etware is proprietary, but that es not mean that it is closed." oes not mean that it is closed."

The Netware Requestor re-ortedly will support OS/2 Stan-ird Edition-based workstations

Access to all Netware ser vices is provided, and users will be able to run both DOS and OS/ 2 applications, Novell said. Usand is slated for delivery in the nter. It is priced at \$50 ers will run the Netware Reand will require Advanced Netware Version 2.1, which estor at their workstations

questor at their workstations alongside OS/2. The Netware Applications Coprocessor reportedly will pro-vide Netware support for OS/2 server-based applications in the file server. The coprocessor will

**IBM** nixes LAN hoasts

formance of server-based appli-cations, said Craig Burton, No-vell's senior vice-president of

BY ELISABETH HORWITT and PATRICIA KEEFE

BOSTON — IBM representatives last week seemed to con tradict claims that application itten to 3Com Corp. and Mi-noft Corp.'s OS/2-based network software will also run on IBM's own LAN Server pro-gram, which is based on IBM's OS/2 Extended Edition pro-

"At this point, you cannot write to Microsoft's LAN Manoger and have an application run on the LAN Server," and Ed-ward Fritch, an IBM communications marketing manager. He said IBM is recommending that OS/2 toftwa S/2 hoftware developers sup-ort IBM's Advanced Program-Communications (APPC) interface if they want to be compatible with IBM's distributed information systems

"Developers want complete compatibility across 3Com, Mi-crosoft and IBM, but I don't think this will happen," said Maurie Prauner, IBM's manager of local-area network products. While IBM incorporated pieces of Microsoft's LAN Manager into its LAN Server; "each vendor is providing its own enhance ets" to the OS/2 networking software, he explained. In a white paper released last

month, 3Com guaranteed that 3+Onen, its Microsoft LAN ased network oper ing system, will be compatible with IBM's OS/2 LAN Server. nd that 3Com would eventually rt APPC.

pport APPC. IBM, "in its market-driven way," is trying to ensure that programmers cannot book their software up to LAN Server's distributed networking functions except through APPC, accord-ing to Charles Pitcher, director of product planning for Rabbit Software Corp. This poses a ndary for never who events

#### y want to link their LANs to M hosts via IBM's LU6.2 but, **Hutton MIS** FROM PAGE 1

ie, want to use LAN . Reportedly, LAN ger is a simpler, less mem-

ent than APPC. Another frustrated group, ac-rding to Pitcher, consists of would-be OS/2 software develers, who do not want to write an application once for the LAN Manager and again for IBM's APPC environment, "LAN Manager is much easier to write to APPC for PC applications. I sk the market will demand th APPC and the LAN Manag-Pitcher said.

"Some people are going ck with IBM Nethios-plus ca-ck with IBM Nethios-plus ca-that agreed IBM" nahility n to link only personal comers may well be content with e Microsoft-3Com product, be said, but everyone else will want to migrate to APPC eventually, n they start linking their PC LANs to a distributed network of

In an interview last week Rob Glaser, director of network keting at Microsoft, said M is not contradicting anything Microsoft has said. Develers' rest concern should be desing their products to support OS/2, which IBM has endorsed as its server operating system, he said, IBM and Microsoft are ers in the OS/2 effort.

Fritch sgreed that software written for OS/2, Netbios or IBM's PC-DOS 3.1 can access LAN Server, However, he said, BM is "strongly recommending APPC" for users who want to ensure that their applications can communicate across a disuted IBM network.

Rabbit Software, s Malvern, Pa.-based developer of software for IBM's Systems Network Architecture, plans to offer its own entation of APPC on the LAN Manager, Pitcher said. The firm also plans to develop its own independent ven of IBM's Communications Man-ager, which provides LAN Secuer access for devices and applications supporting asynchronous, APPC, IBM 3270 and Netbios

said that the firm has not yet de cided which of Hutton's systems, including BIPS, will be retained.

Most of the system questions, he said, are long-term issues that will be decided during the next four or five months. "It would be foolish to do away with [BIPS] and all the software developed for it." Owens "We're going to take a hard look at the processors and see whether they're needed: it's a long-term question

Just hours after agreeing to the acquisition, Shearson Lehman began the arduous task of plan ning how to tie Hutton's 400 worldwide branches to its own IBM Systems Network Architecture (SNA) network. Observers said they expect Si ehman, an American Express Co. subsidiary, to rely on its oth processing capacity to handle the expected increase of business from the merged

Already, Shearson Lehman has ordered IBM 3270 terminals and moderns as well as dedicated data lines so that History branches can begin com ing on the SNA network as soon as the acquisition is comeleted

"If we waited with work of this magnitude, we'd have a substantial delay integrating the firms," Owens said. "We'd lose some of the benefits of doing the tton's initial step in build-

ing its corporate information network was made in the late 1970s with the installation of Data General Corp. Echpse-class processors at its regional offices. A few years latter, Hutton installed BIPS, which is based on DG Eclipse MV-class minicomputers running DG's Comprensive Electronic Office. A DG spokesman said his firm is discussing with Shearson Leb man how to integrate BIPS into the SNA network

Also up in the air is what nan would do with ton's Digital Equipment Corn. VAXs. which are used in the capital markets arena. rson Lehman, which is believed to have a significant ount of excess processing ca city, is in the midst of capacity ing to ascertain its system eds. Owens declined to provide specific capacity figures.
"We're looking at things such

ed last Friday.

A competitive pro

first or

is what we would need if we in grated our development envi ronments and our time-sharing VM environment," he said.

Owens arknowledged that a ned firm with more than \$8 billion in revenue would not

szokeswoman said

MIS sight

both firms when we integrate

5,000 Hutton employees to lose their jobs as a result of the acqui-

sition; many would come from DP/MIS [CW, Dec. 7]. But many of Hutton's top DP/MIS people

are not expected to wait for their

The entire process of tra

ferring the management and op-erations of Hutton's busines

on notices, insi

3Com Corp. that also supports OS/2 workstations is scheduled for delivery in the first quarter.
The Netware Requestor, developed by Novell with assistance from IBM, reportedly alp in the fourth quarter follow-release of IBM's OS/2 Ex-aded Edition, Novell said. ing rek

into a combined DP/MIS unit is expected to take place during the next six months, Owens said. Shearson Lehman's SNA network links the company's 330 in-ernational offices to an IBM inframe complex in a state-of--art data center in de hattan [CW, March 9]. The mainframe complex provides more than 200 different ser-

vices, such as order processing and back-office tasks, to users or BM 3270 terminals. Owens They've built a factory with a huge amount of MIPS Imillions

Difference of style earson Lehman will n cile conflicting systems

egies when it acquires E. F. Hutt Shearson Lehm. systems, ranging from Models 4,000 to 20,000; 40 DG Eclines: Weng VS sys DEC VAX 86

ES. INC. AND E. P. HUTTON & CO CW CHAP

eed to keep all the DP/MIS employees from both compan one industry observer. "It's a arson Lehman expects attri rick-and-mortar approach with tion to take care of some of the overlap, although there will be Hutton, on the other hand an as-vet-undetermined nu of terminations, a company

was an early adopter of distribut-ed processing and has not been solverse to using non-IBM tech-nology. It spent \$100 million "We're not going to fire only tton people," Owens empha-Hutton people," Owens empha-sized. "We will take the best of er a seven-year period build ing a single corporate informa-tion network [CW, Aug. 11] While the company is technologi-cally advanced, it was forced to Wall Street observers said they expect anywhere from 4,000 to seek a suitor because it was se

verely undercapitalized, Wall Street watchers have said. Recent volatility on the world's fiscial markets exposed its vul-

The company recently began installing some of the 10,000 NCR Corp. personal computers it ordered earlier in the year to le brokers, exec support personnel to access data

How do over 5000 MVS users worldwide save budget dollars and get better performance out of: DASD management, PDS management, Report management, Master Console management, SPF, SMP, VSAM, Resource management, Applications Development, Job throughput, CICS, IMS, DB2, Programmer Productivity, etc...???

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SOFTWARE ENGINEERING OF AMERICA, INC.

#### Punch cards CONTINUED FROM PAGE 1

grams his 1401 in the once-popular but now seldom-used Autocoder language. McCoy has one 1401 today, but had six until five years ago. The machines con-tain several ounces of gold, and when prices for that precious metal pesked a few years back, McCoy cashed in and sold

Makes good use of 1401 He uses his remaining 1401 to track infor-mation on 250 bowling leagues and as a backup for his IBM 370. Should his principal mainframe break down, McCoy is conmt that the 1401 can handle its work

is a bit slower than the 370, though. One job that can be done in 27 minutes on the 370 takes seven hours on the 1401, he

says.

McCoy also uses the 1401 as an auxiliary printer. Should his 1,200 line/min ers be busy, he extracts data from the 370 onto magnetic tape and feeds it into the 1401. The 1401's printer can roduce 600 line/min of very-high quality stput, he says. He adds that a new 600 nin printer would cost \$17,000, plus

\$300 per month in maintenance. McCoy states that the machine's 16Kbyte memory is not an extreme hin-drance. "You just have to break a pro-gram into modules. You use the 16K over and over. If you wrote it for a big 370, you

load of payroil and general ledger work. It would put it all into one program," he ex-

> William Doyle, owner of Rand Asso-ciates in Coshocton, Obio, another sercates in Coshocton, Ubio, another service bureau, operates three 1401s. He keeps one on-line, another as backup and a third for spare parts. The machines are used for payroll, billing and accounts payable. His principal and backup machines both use 48 bytes of memory. "In the old days, that was quite a bit," he says.
>
> Doubt excepts that he house his final.

cury, can was quite a bit., "he says. Doyle recounts that he bought his first 1401 in 1971 for \$44,000 and bought the next machine seven years later at a price of \$20,000. About four years ago, he pur-chased another for \$2,000. In contrast, the price of the punched cards the systems such has good up sharply — from \$1 conts to \$4.90 pt 1,000,

Doyle laments.

Verson Durbin, head of Durbin Data Systems in Dallas, uses a 1401 with 16K bytes of memory for all his service bu-

it works for him
"I have a PC I play on now, but it a still not "I have a PC I play on now, but it's still not the the old mainframe. It's wonderful for a service bureau," he says. Durbin runs his data center with his wife and one part-time employee. The data center's work consists primarily of processing the credit insurrance that is sold with sutomobile loses and the like.

loans and the like.

A 1401 user since 1962, Durbin bought his current machine in 1974 for \$10,000. He now pays \$400 per month to a third-party maintenance firm and says reliability is not a problem. The machine's

critically in not a problem. The machine's only develocing me the large amount of an e-conditioning it needs and the high cost of panched erads. The pirch has good promised area. The pirch has good and the high cost of panched erads, or which he says he in very found. "It is possible to patch a program without recompling a" he says, or which the says he in very found. "It is possible to patch a program without recompling a" he says, or which the says he in very found, "the in-change is very feeding. It make the composite history." On the problem of the property in the property of the

vice bureau continues to use the mach for payroll and accounts receivable.

Slow but dependable. It's slow, but its very dependable. It's slow, but its very dependable. It's very reliable; Clem says. His 1401 has 12K bytes of memory, are tape drives and a 600 line/lim printer.

Like McCoy and Durbin, Clem programs his 1401 is Autocoder. He estimates he uses 40,000 to 50,000 punched

Clem says he will keep running the computer indefinitely. If it breaks down and cannot he fixed, he will buy another, he says. "You can get one with 16K and a card-reader punch and four or five tape drives for \$2,000 to \$3,000." Bill Pappas, president of Mir Corp., an-other Dallas-based service bureau, shares

other Dallas-based service bureau, shares the enthusiasm of other 1401 devotees. "There probably never has been, or ever will be, another machine like the 1401," he says.

However, hardheaded reality won out
over sentiment in Pappas's case. He sold
the last of his two 1401s a year ago and

cites space and heat considerations as the reason for the sale. Each went to a scrap dealer for \$2,000.

A good life
Pappas remembers buying a 1401 in
1968 for \$125,000 and recalls that a complete system retailed for about \$500.000 en new

when new. Pappss paid about \$15,000 in 1976 for his first 1401, which he says he used for programming and as a backup for his \$60,400. He bought unother machine sev-eral months later for about the same price

eral mouths later for about the same price and had been writing programs for the 1401 in the Fargo language, which evolved into the RFO language.

Although he programs on FOs today, Pappas says he is not dazied with newfinagled technology.

"There is not a thing I do today that is not the same as I did then. Nothing has changed in 30 years. There is noty more speed, storage and throughput," he says.

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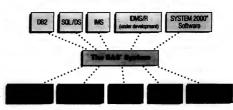
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# CPU planning shift stresses dollars, sense

#### BY JAMES CONNOLLY

ORLANDO, Fla. - The role of a capacity namer or performance analyst may be sitting from advising an MIS director on sich CPU to buy in two years toward tting the most out of existing systems or cost-justifying new applications.

Attendees at CMG '87, the Con

Measurement Group, Inc.'s international conference on performance evaluation, last week observed that capacity planners must break out of the niches in which they

ing senior management statistics such as a cost per I/O or the cost of a transaction

'The big deal'
''A technology issue often is very hard to sell, but if you can make a financial case and a technological case and put them to-gether, you have something to present to management — what we call the big anagement — what we co al," said Ed McDonald, divis

Inc. in Houston.
McDonsid cited the example of Texaco's total replacement of IBM 3000-Vin ministraness with IBM 3090 during the past two years and usid justifying that move to senior management would have been hard bused solely on a capacity plan. Charles E. Segmun, director of infor-mation systems at First Maryland Bus-corp is Ballimore, advised attendess to

#### Cobol to get second addendum

#### BY CHARLES BABCOCK

The panel that recommends changes to the Cobol Isnguage has agreed to petition its supervising body to begin a second ad-dendum process that would bring pro-

posed clarifications and corrections to Co-tol 85 before public review.

Don A. Schricker, chairman of the X3J4 Committee of the American National Standards Institute (ANSI), reported that the committee wants to initiate the second addendum while the first attempt to invoke the addendum procedure and

way.

The clarification and correction procedure does not indicate there are special problems with Cobol 85, Cobol experts said. Rather, it is a typical follow-up procedure to resolve ambiguities discovered in the complete for the new version. in writing compilers for the new version

in wrang compares on the analysis of the language.

Once it obtains permission to proceed, the committee will debate what clarifications and corrections to include and then submit them to public review, Schricker

strategic planning and to support new projects with cost analyses.

"It is very much incumbent on us to find out what is going on and present our view to management," he said.

Jim Everitt, a capacity planner for Weyerhaeuser Co. in Tacoma, Wash, said that in his company, there has been a high level of management acceptance of capac-ity planning but that the emphasis has n on getting as much performance as sible out of existing systems before

choosing new ones.

The traditional role of capacity planner may be weakening, said attendee Les

Csegal, manager of technical support at Toronto Star Newspapers, Ltd. in Toron-

"Things have reached a point where hardware is getting so cheap and immedi-ately available that I think most companies don't see the need to do fantastic plans that aren't going to come about for two or three years," Csegal said. He sug-gested that capacity planning and perforwith a focus on opti performance of existing bardware as software systems. Phil Vasile, a principal sper

McDonnell Douglas Aerospace Informa-tion Services in Long Beach, Calif., said capacity planning and performance ar sis are growing in his company.

A vendor representative who has be active in CMG said his firm is expan

is management services to help capacity planners communicate better with senior management. Mario Morino, president of Morino Associates, Inc. in Vienna, Va., said his firm plans new courses to help planners effect change and to understand the capabilities they acquire in their work.

"The desire is there to do these things.

and certain key users have the wisdom The problem is that these people aren salesmen," Morino said. "I'm convince

# What our transportation clients will tell you about N.E.T. T1 networks:



# VM, DB2 tools lead charge toward automated DP base

claimed progress in their drive toward automated data center operations and expanded their utility offerings, with a focus on IBM's VM and DB2, at the Computer Measurement Group, Inc.'s CMG '87

Measurement Unique
conference last week.

Boole & Babbage, Inc. renamed its
System Manager for IBM's IMS to Autooperator and added support or CICS. The company claimed that Autooperator is a step toward automated data center operations because it intercepts operating sys-tem, subsystem and monitor messages

Babbage's CICS Manager. It is available now at \$14,750 for one CPU and \$22,000 for two CPUs at a single site.

Boole & Babbage also assounce
DASD Advisor, which is an expert sys

tem-based extension of the vendor's DASD Response Manager. While DASD Response Manager gathers, monitors and reports data, DASD Advisor assists tun-ing by identifying problem devices and work loads and recommending solutions in English, the vendor said.

DASD Advisor uses Aion Corp.'s Aion Development System as a shell and can be

MVS and MVS/XA. Existing DASD Re-sponse Manager customers can buy DASD Advisor for \$7,000. Candle Corp. said it will offer Compu-

cept, Inc.'s Intercept for MVS, CICS and IMS under Candle's Automation Facility product line in January. Intercept was dened to manage console messages and er out useless ones, which Candle said may represent more than 50% of a sys-

tem's message traffic.

Candle also entered the DB2 m with a DB2 version of its Omegamor

and CICS. Omegamon for DB2 was designed to monitor DB2 externally and warn of problems when user-defined processing limits are exceeded.

Candle enhanced its Omegamon for VM product with a graphics display denigned to show how one application im-pacts the performance of another and to identify problems in resources like CPUs and I/O systems. The enhancement is set to be available in January, free of charge to Omegamon for VM users. The new version will support IBM's CICS/VM, ac-

Crystel bows
BGS Systems, Inc. added the Crystal Per-formance Evaluator to its family of analy-sis tools. The product adds a personal computer interface to let users draw in-formation out of Crystal modeling support libraries. Users, can then calculate endstraines. Users can then calculate end-user performance and data processing costs for new applications before commit-ting a design to code. Versions are avail-able for DB2, CLCs and IMS. BGS also announced Bestnet Gateway which collects performance data from con\_IBM sections. The commany said that

which collects performance data from non-IBM systems. The company said the BGS VM Applications Planner, as-nounced during the fall, is now in produc-tion. BGS efficials said Emcom Corp. and Duquence Systems, Inc. have agreed to support the network gateway facility.

Duquence systems, inc. have agreed to support the net work gateway facility. Softworks, Inc. released VSAM Data Compressor, which was designed to mini-mize the amount of effort involved in com-pressing data and reallocating space on disk drives using IBM's VSAM. It indask drives using IBM a VSAM. It un-chades an analysis program that deter-mines how much space and money a user can axe with data compression. VSAM Data Compressor is licensed by IBM CPU classification, with initial CPU license fees ranging from \$18,500 for Group 20 ma-chines to \$29,500 for Group 40 systems.

CONTINUED FROM PAGE 14

from ANSI standard-setting panels in late 1986. The process was intended to allow additions to the language prior to the next full-scale revision of it. The proposed in-

full-scale revision of it. The proposed intrinsic functions, would be an optional distinct, functions, would be an optional distinct, functions, would be an optional distinct, of the content include or exclude the functions as they are fit for several years, prior to the mext full-scale revision of Cobel. An optional addendum may become depending on what the standard-setting panels decide to include, Schricker said. The corrections addendum will be a mandatory addition, be said. ANSI XI states not corrections at a re-

ANSI X3 parent on corrections at a re-cent meeting in Austin. Texas. COOPERATIVE

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# NAS ties into VAX, eyes science market

BY KATHY CHIN LEONG

SANTA CLARA, Calif. — mrem. on sering a sizable chunk of the \$19 billion engineering acientific market, National Advanced Systems (NAS) hat week unwelled in first communications products that will SANTA CLARA, Calif. - Intent on sein tie its IBM 370-lik

Equipment Corp. VAXs.
Available as part of th
Systems line, the annou
a set of front-end commi w NAS Cross ments include nunications boards nically link a NAS nes through a Decnet Ethernet network; communica-tions software called Nasink; and Nasmpute, a software transport package id to let users write Fortran applica-tes on a DEC system that can later oper-

While Namet and Naslink can be us for general-purpose commercial applica-tions, NAS spokesman Chuck Mulloy said the highest demand for communications NAS user Chris Ducks son University in South Carolina said a communications link between IRM-com-

In the university

to-DEC connection will be extremely useful for us," Duckenfield said. "DEC will provide connections into IBM, but IBM will not offer links into DEC. The NAS product would give us the needed connections into DEC." He also said the Nat npute software will be welcome to u versity developers who create programs on separate machines and cannot trans-port them to other computer environrouting between systems, reportedly let-the NAS AS/XL or AS/VL machines ap

Namet is sold togeth which covers me access, data transfer and print listings to and from a DEC VAX/VMS system. Together, the prod-ucts are priced at \$125,000 and will be shipped in the accord quarter of next year, according to NAS. Priced at \$60,000, Naacompute will the NAY Experience of the NAS of the NAY Ex-

Priced at \$60,000, Nascompute will give VAX Portrae programmers the ad-vantage of running their programs on NAS machines, which NAS said run three to four time faster than DEC computers. The product is set to be available in the

The scientific grail
The goal of the products is to give engiseering and scientific users the flexibility ving data from one hardware envi-ent to another, according to Tom u, NAS vice-presid er for en

rehitectures, be noted.

The amountements tipped off a NAS trategic focus on penetrating the engineering and scientific community. According to NAS's Mulloy, that segment presents approximately 10% of the ran's customers. Within the next three tears, the company intends to bring that

firm's customers, wru-paran, the company intends to bring that figure up to 30%.

While the communications products are the first sold directly by NAS, the company already sells a local-area set-work-to-TBM Systems Network Archi-tocture gateway that it makes available to

a be company is evaluating whet sell the product directly to custo Mulloy said.

# '88 U.S. ship seen for Fuiitsu drives

TOKYO — Fujitsu Ltd. last week intro-duced 7.56G- and 2.52G-byte hard disk drives called the Facom 6425H and the Facom 6425G, respectively.

drives called the record variant forms of the Facons 64256, respectively.

Although Fujitss did not specify when the products will be shipped oversess, industry watchers predicted the company will start OEM shipments between April and June next year in articipation of the expected amountement of IBM's 3990

all standard year and Jane next year and Jane next year expected announcement of summarized announcement of summarized years of the standard standard years of the standard years of the standard years of the company o

Figure and it boosted track density 12%, compared with its enisting 5G-byte hard disk drive models. Monthly rental fees are set at the equivalent of \$5,555 for the Pacom 6425H and \$3,185 for the Pacom 6425G, with domestic shipments whetheld to begin at many cond-

Pacom 6425G, with domestic abgenents archeduled to begin at year's end.

The firm also added a file control system, called the Pacom 1700A, that features a 4M-byte memory and four path to write and read data. It reportedly will lease for the equivalent of \$2,370 beginners.



# So don't wait for a hard disk disaster to decide that

Pith Generation Systems, creator of the world's leading backup utility, has just unleashed PASTBACK PLUS, the next generation of power and perform in backup products. FASTBACK PLUS is even faster than its predecessor, and even easier to use. The new nion feature can actually cut the number of disks you use in half.

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your data needs the best protection. See your computer dealer today and unleash the power and enformance of FASTBACK PU.S, the leader in data



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...even 1,000 users or more. In fact, Sequoia's advanced, tightlycoupled architecture allows growth to an almost unlimited level, with on-line

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Sequoia also brings the advantages
of fault-tolerance to the PICK market.

of fault-tolerance to the PICK market foult tolerance is a virtual necessity roday for On-Line Transaction Processing applications where downtime is unacceptable. These include traditionally strong PICK markets like financial services, distribution, manufacturing,

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gtated PICK and UNIX environment. The system provides simultaneous PICK Open Architecture and UNIX System V.2 capabilities. And it will run existing appli-

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#### EDITORIAL

# To catch a thief

possor ... THERE'S A nefarious crook operating within your MIS shop.

It appears to be an applications programmer. Or maybe someone in data base administration. Actually, it's looking more like that guy in data entry whose girlfriend got canned last month. On second thought, maybe he in not within your midet at all. Maybe it's an outsider. Somebody with burglary tooks as sophisticated as a \$1,500 personal computer, a \$

telephone and a modem.

One thing's fairly certain: If a crime in your shop is, in fact, committed, perhaps the greatest effort to follow will be in covering it up, because the news of a systems security breach can be

damaging to a company's image.

As this week's Executive Report, beginning on page 73, points out, getting a handle on systems security is reminiscent of the plight of the poor groundskeeper played by Bill Murray in Caddyshack.

DOW groundsceper played by bill Murray in Caddyshack.

He tried nine ways to Sunday to unobtrusively rid the golf course of a pesky groundhog, his patient efforts finally nivers was to demonstriate.

tient efforts finally giving way to dynamiting the links and still failing to uncover the post. The scope of the systems security issue is best illustrated by considering that anyone you speak with who has worked within a systems environment can very likely document a breach of security of which they've been sware.

For the most part, these breaches appear more as annoyances than serious threats to the

organization.

But, as the report notes, the right mixture of indequate systems security and evil intent can produce costly disasters, having immediate cost rumifications (as in the case of Volkswagen AG) as well as potential loss of consumer or customer confidence.

commence.
Undermining efforts to build more secure systems is the difficulty in selling the cost of doing
so to upper management. Increasingly, chief
inancial officers are approving only expenditures
and capital outlays that yield a quantifiable improvement in information systems efficiency,
but installing adequate security measures,
which can be costly, generally cannot be costjustified the ways are way roll gystem can.

So, as one consultant suggested, put the value of enhanced security in terms chief financial officers can understand, such as how much money is likely to be lost in a security breach.

Be aware, too, that some systems appear to be more "breachable" these days than others. Unix-based systems are cropping up as likely targets for hackers, although this fact is prompting accelerated efforts to tighten up that operating system environment.

Ultimately, MIS must perform a balancing act between security — and its costs — and access to data, which is becoming a foremost demand as end-user computing proliferates.



thom: U.S. software firms hire private eyes to crack down on Hong Kong software pirates

# LETTERS TO THE EDITOR

# Another angle as In Fred Vinkovich's article of What threatens mainframe computing?" [CW, Oct. 19], be a grant that mainframe comput.

"What threatens mainframe computings" [CW, Oct. 19], he argued that mainframe computing is a paradigm like the paradigms of scientific thought described by Thomas Kuhn in The Structure of Scientific Revolutions.

hear.

A paradigm in this technical sense is a set of presuppositions that forms the beckground for thought and debate in some area or disciption but is not the subject of rational thought or debate. As Kush remarked, one paradigm is shandoned for associated thought in some comparadigm is shandoned for associate not when it successible to the superior rational merits of its successor but when those in power who support it either die or retire.

The two letters that have already appeared in response to Viskovich's article have useritingly confirmed his thesis, Joseph Viscoret [CW, Nov. 9] meered openly at Visiouvich's conclusions. David Dick [CW, Nov. 16] strainbuted to Viskovich the absured conclusion that as IBM Personal System?! Model 30 in, wishout any qualification, equivalent to all IBM 4231 Model or particles of the conception of the control of the particles of the control of the

If this is the best mainframe defenders can do against Viskovich, then perhaps be has uncovered a paradigm to which commitment is more emotional than

At the risk of further confirming the thesis about mainframe computing as a nonrational issue, I will suggest the, given current technology, there is one reason why peer-to-peer networks of PS/2 mechines are not

complex, intensive corpora computing tasks any time scon. The property of shared-mar

The property of blamed-camory computer systems, sometimes referred to as space-time coherence, allows a single opersting system in control of such a mine the states of each grosssor in that complex in order to allocate system resources efficiently based on this information. Distributed systems, lacking thereof memory, most timed, and the state of the entire computing complex, because to determine the state of the entire computing complex, because

lacking shared memory, must instead rely on poling and menage-based communications to determine the nature of the entire computing complex, because this kind of communication is terribly slow compared with the processors themselves. By the time information.

This week

# in history

President Carter forms a commission to deal with the problems created by large antitust cases such as the commission will work from the assumption that the antitust laws are what they should be, but better procedures to expedite their demonstration of the comments need to be developed.

Dec. 13, 1982

Burroughs Corp. unveils its irrgest computer system to date—the B7900 — which reportedly boasts up to 16 times more memory than the farm's previous top-of-the-face processor, the B7800.

about the state of each processor has been collected at a ningle point of coatrol, these processors have gone on to new states than readering the information unless as a basis for making de cisions. Clearly, a typical commercial mainframe computer, as a shared-memory system, has the property of space-time on herence and can therefore make the order of a validable system resources such as processors and supposessors and the processors are the processors are the processors and the processors are the proc

a shared-memory system, has the property of space-time coberence and can therefore make use of a willable system recources such as processors and memory mech more quickly and efficiently in carrying out large, of the conditional properties of the conditional control of the consistent computers to enclose conportate computers to enclose conportate computing, however, use

porate computing, however, unless technological progressomehow stalls short of producing interpressor communication speech approaching the
speech approach
technology for interconnecting
the processors they comprise
standing still. Velovich may
have been correct in suggesting
that BBM's PS(2 Micro Channe
is a milestone allong the way.

John Socields
Director
u of Information Services
Pennsylvania Treasury
Department

Computerworld unicomes con ments from its readers. Letter may be edited for brevity an clority and should be addresse to Bill Laberia, Editor, Computerworld, P.O. Bes 9171, 2375 Cc chituate Road, Framingham

# the same language?

Vendors must emphasize more than technical excellence to sell their products' benefits to MIS



dor appears in an MIS direc-tor's office and proudly says, "I can cut your

him out? Of course not US directors do throw him

fourth-generation program-ing languages. Their produc-ty benefits are unquestioned. factor-of-two productivity ininstion is less of a problem an it once was the languages we improved, and MIPS are

The resistance of MIS profes-

moltant to user and vendor execu-nt. Resed in Needham, Mass., he re-thy published Win Them Over: A

ons may be raised to cloud an RM, to snow soutechnical executives or to create an aura of scientific objectivity, but they are seldom the heart of the mat-

Time on the job. How long ng to a dif

ent of time on the job ogramming. Defining ents, designing files,

"Hi, Bob Williams?" "Yes?"
"This is Bill Roberts from BM. Just thought I'd stop by to see how everything was going. Beautiful day, inn't it? Say, nice suit. You don't see too many MIS

exacs who know how to dress. By the way, I thought I'd tell you about a special limited-time offer

munications controllers."
"Nice try, Roberts, but you know how tight budgets are at the end of the year. Besides, you did such a good job of selling equipment to the guy that used to work hear that you measure.

to work here that upper manage-ment's put a freeze on new purchases."
"Yes, of course, but maybe
the senior V.P. would be up for a
game of golf to talk it ower. Have
you thought of adding some
memory to your CPU to boost
your DB2 performance?
"Nope. But since you're here,

# 4GLs: Are we talking | Toward a new global economy

The U.S. must foster collective entrepreneurialism to remain competitive

JOHN KIRKLEY

ers to speculate that IBM may go one step further and take over the running of data centers com-

Young said that the work thing we could do would be each down our efforts. He commented that the U.S. is still by the world's technological leader and urged us to bring the same espective and energy to the rest of the product cycle — to develop, market and distribute our wares with the same Yapkee ingensity



# **Big Blue** as the customer

STANLEY GIBSON



comes the customer.

IBM recessty acknowledged that it is trying a policy in which it acts as a point of reference for all of the maintenance in a data

center.

If your Memorex Corp. disk
drive breaks, you call IBM. IBM
in turn notifies Memorex. In this
way, a customer doesn't have to rry about who to call when nething goes down. IBM does

caused some operations manag

machines and money to turn them into standardised prod-ucts) at about the same time and

#### CONTINUED FROM PAGE 21

idny and sick time and so on means it, at best, half of a person's time on the

fourth-generation language, the produc-tivity gain is gone; more than three months results in a net loss.

Applicants experienced in Cobol or her widely used, standardized laniges have been told for years to our-e these valuable skills. They have been warded for them and know that pro-

uld they risk a career detour be

gical crisis. The same manager who not them to CICS Cohol class but year

now wants people who know Focusi What does this change say to the current staff about the future value of their skills to

• They are in cy. There's ing wrong with efficiency,

 They are adding feature
 They are competing or have 10 numeric data types, and the or guys only have six." That's not where

tion languages do?

start from an el

etplace success in m atream commercial data processin Fourth-generation languages are alrea-technically adequate, but technical me-can't be the main selling point to get th language into the DP shop.

#### Customer

#### CONTINUED FROM PAGE 21

take a few of these old 3084s off my ds. We can sell used equipment now, know, and if there's one thing I've got around here, it's used equipment. nice tie. Not too loud: I like that in a s

"Thanks, but you want me to buy from

"That's right. Hey, IBM is built on sales. In our high rise, I've got 20 floors of personal computers that we can't use anymore because you sold the previous guys on replacing them all with FS/2s. Take them all, Roberts, and you don't have to pay us for six months."
"How about a new 3090, and you don't
have to pay for a year? I've got a quota to

"Maybe. I'll be transferred by th anyway. The guys upstairs in accounting won't see the bill till I'm gone."

"So it's a deal?"

"OK, OK, but there's just one thing.
Will you take those used PCs off my hands
or not? I may work in a data center, but

or not? I may work in a data conter, but Fee got a quata to make, too. I'm still short of the 100% Club, and I'm sitting on a sip-bulding laid old equipment."
"Sorry. If you want to make your quote, try this, it works every time. Call a third-party maintenance company to harden enviro. These heep calling them in the middle of the night to come far your reachines. They'll have to pay our parts co-ther SEOD par part after hours. That'll add up pretty soci.

#### Economy CONTINUED FROM PAGE 21

the very finest in quality workmusship?

Can we make new ideas like collective enterpreneurishme part of the fabric of our corporate life? Do we have the vision and the collective will as a nation to adopt the social and educational programs and reforms that are so desperately needed?

If we do not heed the works of people like jobs Young and Robert Raich and institute major changes in the way we do have here and the work of the people will be considered to the social and the social seasons and Robert Raich and institute major changes in the way we do having not only overwhalm railying round humans into. Our overstant railying round humans in the contraction of the social seasons and the social seasons are so that the social seasons a



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# **SOFTWARE & SERVICES**

SOFT TALK

Howard Fosdick

# VM's coming of age



, most analysts place its with at between 30% and 50% per year. VM will surpa DOS/VSE this year as IBM's ame operating system. It's clear that VM has

oved out of the backwater and is the operating system that an against taking to market. (Legend has it that management later noticed that the group used VM

ior its own software develop-ment.) VM is IBM'a primary tion center. It is increasingly

accepted for busin ing, even though it remains weak in transaction processing VM's popularity is rooted in is technical strengths. Premier mong these is VM's interac-

e orientation. With its tel rts roughly double the er of interactive users

# U.S., UK team up for study

BY CHARLES BABCOCK

ARLINGTON, Va. - U.S. and British experts on software ntenance are plan agers in software maintenance to collect fresh data on the

Software Maintenance at the University of Durham in England, one of the few academic sites devoted to the subject. British Telecom, the UK's largest telephone company, will participate in the survey and co-sponsor it in the UK.

In the U.S., the Federal Software Management Support Con-

Data View

Cost-cutting among reasons experts will research software maintenance

Lientz and Swa versity of Sou

independent survey that could also produce data for the center. The two parties are defining terms and discussing questions that they agree need to be

ie done in past erts on both sides of the At-c said there is little research

# controller offered

Intelligent

BY ALAN ALPER

HACKENSACK, N.J. - Syll

Continued on page 3)

# ADR extends system to VM BY ROSEMARY HAMILTON

PRINCETON, NJ. -PRINCETON, N.J. — Applied Data Research, Inc. (ADR) reeased a version of its

cy did their work, it was

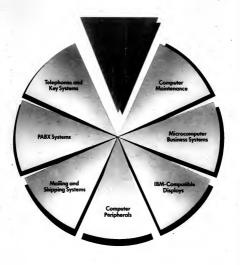
was a necessary

vironments.

ADR/The Librarian Release
3.7 manages the updates of source code programs in order to reduce programming errors, the vendor said.

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# Firm develops tools for use with Dibol

Digital Information Systems' DBL Synergy utilities do windows under MS-DOS, VAX/VMS

#### BY SUZANNE WEIXEL

RANCHO CORDOVA, Calif. - The first in a series of utilities designed for use with a version of the ANSI-standard Dibol

Dibol was developed by Digital Equi ent Corp. for use on its VAX comput DBL is a version of Dibol developed by

Digital Informa ligital Information Systems. The DBL ynergy utilities are intended to further nhance the DBL language, the company

The first utility in DBL Synergy is a windowing tool that provides the develop-er with the flexibility to open up to 256

ws on the screen at one time, the company said. signed to simplify the display of menus and Help screens and to provide a consistent appearance in applications.

Kevin Curry, a senior programmi analyst at Agena Corp. in Columb Ohio, said he has used DBL for the

rs. "DBL Synergy requ de for creating, maintaining and updat-g windows. It is also portable across the ferent operating systems we use," urry noted.

Originally, Curry said, Agena had con-dered writing its own windowing tool but found that it required too much I

Digital Information Systems said it in tends to add other utilities to DBL Syner gy, including an interface to relations

gy, including an interface to relational data base transagement systems such as Unify, Inc.'s Unify; a data dictionary; are port generator; and a Make utility. DBL Synergy is currently available. Prices start at 4489 under Microsoft Corp.'s MS-DOS and go to \$1,289 on the VAX line. And the start of the start of the start of the to \$7,489 on VAX machine. Digital In-formation Systems and

tructured language ording to Michele C. Wong, executive president of Digital Information Sys-s, DBL is more structured than other

guages, such as Cobol. DBL includes structured ming, a debugging facility, program b ing, virtual memory, sort and me statements and multidimensional arr

BL SYNERGY requires very little code for creating, maintaining and updating windows. It is also portable across the different operating systems we use.

KEVIN CURRY AGENA CORP.

according to Wong,
DBL is also able to compile standard
Dibol code, the company said.
DBL, which can be ported to a variety
of operating systems including MS-DOS,
DBC's VAX/VMS, Unix and Novell, Inc.'s Netware, was orig ago, Wong said.

Approximately 15,000 licenses have

### ADR

CONTINUED FROM PAGE 25 of source code from test to production en vironments, the change control system leasens the chances of programmers' re-vising modules in unexpected ways or changing modules that have already been updated, according to ADR.

Shoring Librarian possible The system has been offered for IBM's VSE and MVS environments. With the new release, sites will be able to share Li-brarian master files across IBM operating systems, ADR said.

The additional support of ISPF gives use a access to IBM's dialogue manage-ment service for the MVS and VM envi-

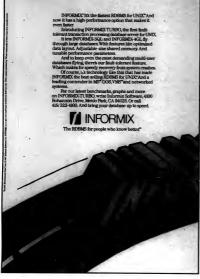
ISPF is most often used by application programmers to develop interactive ap-plications with menus and other end-user

facilities.

ADR/The Librarian Release 3.7 includes an updated version of Comparator II, a Librarian component for the MVS environment that allows comparisons of records that are of fixed or variable

length, the company said.

Permanent licenses for ADR/The Li-brarian Release 3.7 are \$25,000 for VSE and VM users and \$59,900 for MVS users, ADR said.



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### Fosdick

CONTINUED FROM PAGE 25

that can be supported by TSO at an MVS site with an equivalent machine.
Unlike TSO, which was added onto a batch processing operating system, CMS was specifically designed for interactive computing. It's widely considered IBM's

CMS also features exceptional software development facilities. The VM/CMS environment can be tailored to the individual programmer's needs, allowing a programmer to request the amount of memory needed, tailor the edi

a virtual operating system console, VM's REXX command procedure language allows the programmer to invoke operating system commands from within a REXX program. The REXX command set is so owerful that it was included in IBM's

Systems Application Architecture rather than command languages from the MVS or VSE environments. In addition to these strengths, pro-rammers may develop code for MVS and

VSE systems as well as VM under CMS. And programmers can test code for remote sites on a local bost. In an era of distributed computing and programmer workstations, these capabilities give VM/CMS an increasingly critical role. VM's unique characteristic is its ability to act as a "hypervisor" - an operating system that runs other operating systems. It achieves this by "virtualizing" computer resources, making it appear to each guest operating system that it alone

The coresidency of several operating systems on a single machine strongly ap peals to customers supporting multiple operating systems. One machine sup-

ports testing, conversions and reconfi-guration of operating systems. Even sites with a single mainframe gain the advantages of diverse operating syste of diverse operating systems. For the, companies running DOS/VSE under VM reap the interactive benefits of CMS while retaining the production strengths of VSE, VSE is estimated to run at 90% of its capacity under VM vs. stand-alone operation.

Another VM advantage is that it re-quires fewer systems programmers than other mainframe operating systems. This is critical to the many smaller company 1200 and remainly the nies running 4300s and especially the newer 9370s, since these sites can't afford systems expertise. As VM has achieved market success, IBM has a First, one should recognize that IBM has propagated VM/CMS across its comme

The presence of a single CMS moni-tor across machines of different sizes al means that programs and programmer

Ils are transferable. VM/CMS represents IBM's answer to critics who begrudge the company its diverse hardware and software offerdiverse hardware and software offer-ings. While DEC runs a single operating system on all its machines, mailest through largest, IBM can now make that anne claim. And while Usix afficionation claim applications portability and skills transferability across machines of any size. IBM matches that claim through CMS.

Foodick is an industry analyst in Villa Park, Ill., and author of VM/CMS Handbook: For Programmers

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Many bulls in functions including string handling

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tips our own previous release by 35%.	Sander San			-
	-			~

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Ny .	State	29	
sightere			CW14DEC87
And to: SAS institute Inc., A	Mr: CC, SAS Circle, B	ex 8000,	

#### U.S., UK study CONTINUED FROM PAGE 25

tion," Harrison said.

The federal Office of Management and Budget (OMB), attempting to put a lid on rising maintenance costs, issued a directive in July 1986 that maintenance expenses were to be cut 25% during the

next three years.

The author of the directive, Franklin S.
Reeder, attended the Data Processing Management Association's conference two weeks ago and answered, "We don't know," when asked how OMB planned to measure whether software maintenance groups were living up to the directive.

"Little desire to analyze"
"In federal systems, it has not been diffi-"In rocera systems, it has not been diffi-cult to generate money for new-systems. There's been little desire to analyze what's wrong with existing systems and squeeze more productivity out of them," Harrison noted.

squeeze more productivity out of them," Harrison noted.

"We know we're spending a lot of mon-yor on maintenance. We don't know where it's going exactly," said John Foster, head of the software engineering applications group for British Telecon.

Barrison, Foster, Mel A. Colter, a soft-ware maintenance author and consultant with Colter Enterprises. Inc., in Mons-ment, Colo., and Keth Bennett, director of commuter voices at the Linestee of commuters.

of computer science at the University of Durham, are working together to han-mer out common definitions and approaches for a survey on each side of the Atlantic. They do not plan to do exactly the same questionnaire. Rather, they want to collect data that both sides can agree that they know what it means.

The group is seeking commercial com-nies in the U.S. and UK that wish to participate in the survey. Anyone interested should contact Foster at British Telecom, Research Laboratories, Martic-sham Heath, Ipswich IP5 7RE.

The surveys on maintenance are also being advocated by Colter, who gave the keynote address at the DPMA's 5th an-

# Intelligent

CONTINUED FROM PAGE 25

Since compiling can consume about 20% of a CPU's capacity, a large reduc-tion in compile time, such as the 75% re-ported by one Cobol Express user, may ost effective machine capacity by 15%.

The product operates on any IBM mainframe or equivalent running IBM's MVS/370, MVS/XA or VM/CMS operating systems. It supports all Cobol preprocessors, such as CICS; post-processors, such as Computer Associates international, Inc.'s CA-Optimizer; and arce code storage products, such as assophic Software, Inc.'s Panyalet and Applied Data Research, Inc.'s Librarian. Cobol Express is priced at \$3,200 per processor per year for a three-year li-

Cobol Express has already been in-stalled at 10 sites, Rintel said, including Bank Leumi Trust Co. of New York and ader's Digest Association, Inc. in assantville, N.Y. Installations using Cobol Express have projected cost savings of between \$65,000 and \$210,000, depending on the extent of Cobol develo nd maintenance and internal charge

k rates, Syllogy said Bank Leumi is using Cobol Express ith its IBM 4341 Group 2 running un MVS/SP. The system is used prin for development, so a good deal of CPU rces are consumed by recomp as programmers test their code, noted Harry Adler, project manager in charge of

fore Cobol Express was installed, piling used 55.3% of computer time, 61% of execute channel programs -- bet-ter known as I/Os -- and 55% of service units. When using Cobol Express, there was a 72% improvement in computer time, a 73% reduction in execute channel programs and a 67.5% savings in service units, Bank Leumi reported. Cobol pro-grams with 20,000 to 30,000 lines are now done in 20 minutes, do

'Helps a great deal'
'With all the compiles we do, cutting down the time to 20 minutes helps us a great deal," Adler asserted. "If a person has a problem, he fixes it and recompiles quickly. It doesn't lock out the rest of people who need to do recompiles."

Sal Costenzo, assistant director of data

Star Contents, assistant unrector to data rocessing technical services at Reader's igest, has been using Cobol Express on se firm's IBM 3090 Model 400E running MVS/XA for the last year. The firm ru about 1,000 batch jobs daily to update customer files, he said, Cobol Express odaced savings when compiling for the st time as well as in recompiling, with gains of 40% to 80%, Costenzo said. "When you recompile, it ranged from 40% to 80% savings; you're talking about an average of a 58% reduction in comput-

an average of a 55% reduction in computer resources, the sid.

Currently, Cobol Express does not support VS Cobel III—IBM in latest Cobol compiler—although Syllogy's Ristel said he is negotiating with IBM to iscense the source code. The problem, Ristel pointed out, is IBM's policy of providing only object code to independent companies of the computer of the comput tel said. "So far, they've said yes, that it

# OA tools aimed at Prelude 4GL

BY SUZANNE WEIXEL

CAMBRIDGE, Mass. - V introduced a set of office aut

reduced a set of office automation pro-ctivity tools for use with its Preluk data base management system. According to a company sp the Prelude Office Information 5 lows office automation applications to be

It can also extend the interfi es, the applications avaclude spreadsheets, graphics, word cessing, calendar and project man ment. All modules use a common s s and keysts

mon set o

ports data transfer b electronic mail betwe ned around a Lotu et, Inc. 1-2-3-type menu, sitive help and error ind tors appear as pop-up windows within an

de fourth-gen

re tasks in add

The Prelude Office Information Sy m, priced at \$1,995, is currently ava

tom, priced at \$1,995, is currently smaller on the IBM Personal Computer AT and compatibles and the AT &T 3B line of computers, the vendor said.

Prelade runs under Unix System V on dear Unix System V on dear Unix System V on the standard Unix System V. Venture costs from \$400 on a PC AT to \$15,800 on a Digital control of the standard Unix System V. Venture Prelude has an installed base of more than \$3,000 units, the wanter gain.

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scluding applicat generators) and

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#### R 0 D U C

### Applications packages

Interleaf, Inc. has announced a reconfi-guration of its TPS publishing software into a core text-and-graphics product and two sets of bundled options.

TPS provides word processing, auto-matic page layout, graphics and imaging and long-document management capabil-ties. The core version was designed as a networked product.

The advanced graphics option pro-vides diagramming capabilities such as etric conversions and line-art imag-

TPS runs on workstations from IBM; collo Computer, Inc.; Digital Equip Corp.; and Sun Microsystems, Inc. as well as on Apple Computer, Inc.'s Macintosh

TPS costs \$12,500. Core TPS costs \$6,500. The options cost \$4,000 each. Interleaf, Ten Canal Park, Cambridge. Mass. 02141. 617-577-9800.

ort package for running AT&T's Ditroff software under the Digital Equip-ment Corp. VAX/VMS operating system has been announced by Talaris Sys-

tems, Inc.
The package, called Ditroff-Sup-port-VMS, lets VAX/VMS users print documents typeset using Ditroff on Talaris Quic-based laser printers. It includes the Ditroff software, sublicensed from AT&T; the Documentor's Workbench; 120 Ditroff fonts in portrait and landscape orientation; and documentation.

Ditroff-Support-VMS is priced at Talaris Systems, P.O. Box 261580. San Diego, Calif. 92126, 619-587-0787.

#### Services

ister recovery planning guide called ingency Planning Strate-Contingency

gies/90 has been announced by Contin-gency Planning Research, Inc. The guide is said to provide the infor-

mation necessary for companies to devel-op business resumption plans. It includes document restoration strategies, hot-site locations, planning for the loss of employees, data center relocation planning and

simulation strategies.

Contingency Planning Strategies/90 is intended for sites that use systems like IBM's System/38, 9370, 4300 and 3000; Data General Corp.'s MV series; Digital Equipment Corp.'s VAX; Unisys Corp. systems; Wang Laboratories, Inc.'s VS/7100; and the NCR Corp. 9000. The guide costs \$125 per copy.
Contingency Planning Research, P.O.
Box 568, Glenwood Landing, N.Y.
11547, 516-754-7087.

#### NEW AT DEXPO WEST '87

Quantum PM, real-time performance-monitoring software for Digital Equip-ment Corp. VAX systems, was announced

Quantum PM is said to collect and report configuration, CPU, I/O and memory statistics for performance analysis, sys-

tem tuning and capacity planning. It col-lects statistics directly from DEC's VMS. According to the vendor, the system man ager can define, adjust, modify and delete statistic groups used in collecting and reporting data

Pricing ranges from \$1,000 to \$54,000, depending on system configura-tion. Computer Information Systems, 165 Bay State Drive, Braintree, Mass. 02184.617-848-7515. MCBA, Inc. released its Labor Per-formance software package for VAX

Part of MCBA's Man tem in VAX Cobol, the package supports clock-card entry and editing. Other fea-tures include the ability to use files creat-

ed by data terminals; analyze performance productivity; support reporting by department crew or work center; centraldepartment crew or work center; consise-ine labor transaction entry; support an incentive system; support multiple compa-nies; and interface with other packages in MCBA's Manufacturing System.

The Labor Performance package costs from \$4,000 to \$7,500, MCBA, 425 W. Broadway, Glendale, Calif. 91204. 818-242-9600.

Pacershare, software that enables ny VAX/VMS system to function as an Apple Computer, Inc. Appleshare-com-patible file server, was introduced by Pacer Software, Inc.

The software implements the Apple Filing Protocol on a VAX system, enabling the VAX to act as a large file server aroung the VAX to act as a large hie server for an Apple Macintosh network. The Macintosh mouse and graphics interface can be used to peruse the VMS file syscan be used to persue the VMS file syn-tem, create directories, move directory trees or access any VME file type from withins attandard Macintosh application. Pacershare requires Pacer's PClink communication software installed on the VAX. The Macintoshes must be connect-

Supporting five concurrent users on a DEC Microvax, PClink costs \$2,000, and Pacershare costs \$400. Pacer, Suite 402, 7911 Hernchel Ave., La Jolla Casse

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### No Dbase IV for Christmas



made it to an alpha-test version so no \$2 million. Anybody want to assume payments on an al-most-new Phrache<sup>3</sup> This is Dbasically it. Users interested in the still-unfinishe se IV can catch a glimpse of the alpha-test version at the Dec. 15 meeting of the Dbar

ecial Interest Group of the Special Interest Group of the NYPC Users Group, a Dbased rce said recently. You're Dhasically hired. Ashton-Tate has added Mosi M. Zloof to its development staff as senior scientist in charge of software development. Zloof will be responsible for advanced user interfaces for data base apstaff as senior scientist in cha

# Buvers skirt clone service woes

Users discover imaginitive ways to support low-cost units

BY ALAN J. RYAN Once snubbed by big businesses low-priced IBM Personal Computer clones are making their way onto corporate America's desk tops with the help of some innovative approaches to ser-

e. While many business buyers now publicly boast of purchasing two clones for the price of one IBM or Compaq Computer Corp. machine, they also point out that there is a trade-off in availability and ease of service. However,

The manager of end-user supin the first 30 days and issued a 30-day money-back guarantee as well as a one-year warranty on all parts and labor. Firestone Tire & Rubber Co

is a minager of enc-user sup-port at a major oil company said his firm has purchased approxi-mately 280 PC's Limited per-sonal computers from Dell Com-puter Corp. in Austin, Texas, at a savings of 40% over comparably equipped IBM offerings. Hon-eywell Bull, Inc. representatives

cywes bus, inc. representatives service the units. Carol Kellogg, assistant vice-president of marketing systems at Mony Financial Services Co. in Teaneck, N.J., said she is recnmending a low-profile clone her company's 3,000 field les representatives.
According to Kellogg, the ndor has agreed to pay for any pping if the units break down fixed on-site by Carolina Freight

technicians.
All four users said price was the most important factor in their decision to buy clones. But ere are some concessions to be

Low-end clone makers (who prefer to be called compatible makers) generally do not offer on-site service contracts. While most offer toll-free service lines only the most persi steet ca

with problems fre-Continued on page 41

## Data View

Color output as for the next two years, based on 1,296



Prohably will buy

Probably will not buy

BY ED SCANNELL

Bricklin enhances

prototype developer

NEWTON, Mass. - Dan Brick-NEWTON, Mass. — Dan Brick-lin, president of Software Gar-den, Inc. and creator of Visicalc, last week shapped the follow-up to his Demo Program, which al-lows both experienced and novice corporate developers to cre

in Alcron, Ohio, has standardised on both Zenith Data Systems PCs and various models of IBM's Personal System/2, Selected for their low price, the Zenith units

e repaired in-house. Rick Frye, manager of re-

surch and development at Caro-na Freight Corp. in Cherryville,

nes that he claimed are both

t-effective and reliable. If ere is a problem, the unit is

N.C., said his company has pur chused more than 60 Everer Inc. System 1800

ir low price, the Ze

ate program prototypes.

Appropriately called Demo II program, the enhanced product now includes the ability to capture bit-mapped graphics from other programs, a run facility

For Huge IMS Progr

80286/386 machines

Our XM<sup>th</sup> Memory Extender for PC-DOS and 32 bit

compiler architecture make it possible to handle them on

VS COBOL Workbench is a unique system of software tools for maintaining, creating, testing, and running advanced COBOL programs on PCs. The IMS option greatly enhances its usability for mainframe orco-

and numeric variables.

Demo II, which contain

runtime version, costs \$195 and comes with a license to make an unlimited number of copies of the runtime version. Bricklin

said the original program, priced at \$74.95, will continue to be

The new version also con-tains a significantly updated user manual along with templates, an on-line tutorial and sample files, and a full-prompted program-ming language, Bricklin said. Continued on page 41

# cations development. According to Ashton-Tate, IMS DB/DC on a PC? It's here now.

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- Use better and more responsive test facilities
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- GSAM CHECKPOINT/RESTART Secondary indices
- Complete SSA pro All SSA Command Codes
  - Adherence to DB positionine rules
- Conversational and non-conversational trancodes "We found and corrected errors in minutes where we used to take days," Report from Beta Size User

- Exact PCB feedback (Status Code, Key feed-back and length, Segment Name and Level, etc.)
- MFS support for 3278 Models 2, 3, and 4 /FOR and /EXIT
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The Change Control Experts



William Zachmann Modems'

# little helper

For some rea son, personal software has al ways been a little me. Although I have a fairly extensive data communication background. I never really feel

that I've got things in hand when it comes to mod-Of course, nearly every mo-

dem communications package works fine — when it works fine. That's just it; something's always going wrong. For in-stance, logging on to a new service just doesn't seem to work right. The modem that has always worked fine suddenly can't seem to recognize a carrier

tone at 2,400 bit/se That's when the trouble starts. Figuring out what isn't working, why and what to do to fix it is never easy. With different

modern settings, data transfer protocols, terminal emulation modes and other variables to choose from, there are lots of

ways to go wrong. As if that weren't bad nough, nearly every modern communications software even more difficult. All the pop-

ular data communications pro ns seem to have come up with some pretty mysterious ways of doing at least some of the things you need to get done. Continued on page 40

# DOS Merge 286 hits the road

Although price is right, limitations, complexity dissuade some

BY JULIE PITTA

SCOTTS VALLEY, Calif. -The shility to combine Microsoft Corp. MS-DOS and Unix campbilties in one system has users looking to software packages like DOS Merge 286, a joint development product from Micro-port Systems, Inc. and Locus

Computing Corp.
"It has the potential to be the wave of the future," said Paul Cubbage, an industry analyst at Dataquest, Inc. "The average computer user wants multitask-

ing and access to all the system's memory. Combining DOS and At \$149, DOS Merge 286, sich began shipping in Septem-

ber, should prove mexpensive enough for most users. Although the price is right, DOS Merge 286 may dissuade some because of its limitations. Only one DOS program can run under DOS Merge 286 at a time because of the limitations imposed by the architecture of its Intel Corp. 1286 chip. 446cionally, it may be usual-evenous

Additionary, it may or unsurable for the average personal computer user because of the complexity inherent in Unix and the difficulty users may experience in switching between the operating systems.

Like having OS/2 With DOS Merge 286, files are stored on a single file system and may be accessed from either DOS or Unix. Microport said users are sble to switch between

DOS and Unix by pressing a bot Microport has billed DOS Merge 286 as a package that gives PC users "the advantages of OS/2 now," referring to the operating system that is current-

ly under development by Micro soft and IBM. An Intel 80386 ven software, which was also jointly developed by Locus and Micro-

Ronald Bolin, staff manager or Southern Bell Telephone and Telegraph Co.'s network de partment, said his department has purchased DOS Merge 286 but has opted not to use the package because of its inability to run DOS-based communica-tions software reliably.

Not easy to use "It's satisfactory with most DOS applications," Bolin said, "but it's unusable in serial communications. It misses characters. He add ed, however, that data can be transmitted in Unit

Without a good working knowledge of both DOS and Unix, using DOS Merge 286 could prove difficult, users said.
"To go from just using DOS to using Unix represents a pr ty healthy learning curve," itted Dave Granz, a consultant for Acrosystems Corp., a Bever-ly, Mass.-based manufacturer of ta acquisition systems. Acro is using DOS Merge 286 for software development, Granz said. Using the package, users can take advantage of Un-ix's more powerful software de-velopment tools when working

Bost of both worlds'
"It kind of gives me the best of both worlds," Granz explained. "But it could be improved. Some ograms work better from Unix in others. Some don't allow input and output to be redirected."

Dataquest's Cubbage said be

und the product's user interface is unwieldy. "For PC users it has been kind of complex and icult to use," he maintained 'The implementation of the er interface is clumsy and emplex. It requires much more nowledge of the computer sys-

tem than the average user b The average user doesn't do the average user doesn't do many operating system commands," Cubbage said.

Despite its limitations, DOS Merge 286 may provide users with an inexpensive solution to the DOS-Unix dilemma.

"There's a lot of acceptance for this kind of approach," Cub-bage maintained. "Hopefully, ey'll work out some of the

# PC videotape training lauded as more effective

BY DOUGLAS BARNEY

Microcomputers do not do anything unless someone knows how to use them. But if Learn-

PC Video Systems, along with a host of other video-based training firms, has its way, the lack of end-user knowledge will cease to Frances Mendelsohn, infor-

mation center manager for the Food and Drug Administration, or to built-in tutorials when it

comes to training users. Among the many training products used by Mendelsohn are Learn-PC's videos on Microsoft Corp's MS-DOS, Ashton-Tate Corp.'s Dhase and Lotus Develop Corp. a 1-2-3.

"Different packages have their own training that comes bundled, but we find you get better training if you take someone else's course." Mendelsohn said. You can chest with some of the other posterns ting to M th built-in tutorials all a user has to do is figure out the sequence or pottern of answers to complete the lesson.

Live presentation needed With Learn-PC, Mendelsohn runs the video tape, pauses the tape to go over the material cov-ered and allows the class to repeat what it has learned. It takes more than just a tape to get peo-ple trained. "I lecture and fill in little gaps. I find these tapes need a live person. People are going to get stuck, and watching the tape 10 times isn't going to get them unstuck," Mendelsohn explained. Mendelsohn also oc-casionally lends the tapes to us-

What is the altern eo-based training for Mendel-solm? Without it, "it would be ch more difficult and much more expensive. You would have two choices: not to train, or him contractors to do it," she said This is a cost-effective way to get a lot of people trained." Learn-PC, based in Minns apolis, offers tapes that cost from \$495 to \$1045.

# Despite quirks, Wang laptop suits users' needs

BY ALAN J. RYAN Wang Laboratories, Inc.'s year-

old Laptop Computer certainly oblems users say should be ted, including a hard-toread LCD screen, a short battery life and a slow built-in printer. Nonetheless, users interviewed by Computerworld re-cently said the product's overall performance meets their needs.

"The laptop did everything we expected it to do, but there we expected it to do, but there were a few quirks," said Victor Emanuel, a distributed support analyst at American Family Mu-tual Insurance Co. in Madison.

Emanuel said the laptop's

17.5-pitch printout. "I wanted to get a 12-pitch . . . most applica-tions on the [Wang] VS print out in 12-pitch. But the smaller pitch wasn't svailable at this time sided. "But the concept of the printer is good, especially since it still kept the portable under 15

A Wang spokesman said the company has always indicated that the printer will not deliver letter quality but that the user has the option of attaching a letter-quality printer to the laptop's RS-232C port. Users have also cited the lap-

top's short battery life as a prob-lem. "The battery life is only four hours — and possibly less, if the user is accessing the Win-chester or doing printing," said **Laptop Computer** Price \$2,530 cible CMOS

 16-bit architect
 MS-DOS 8.2 S12K-byte memory
 expandable to 1M byte
 Supertwist monoclaror
LCD with 640-by 200-at

printer operating at 18 char/sec. in burst mode

m of Jones, Day, Reavis & ague in Cleveland, He adder

Wang said a new release of Microsoft Corp.'s MS-DOS due in the first part of next year will nce the utilities that han disk access, thus taxing the bat-tery power less than it has been.

uring operation, the user "During operation, the user will be able to have a quiet drive," the Wang spokesman mail. However, be added, "it will still be a four-hour battery life." Uners can purchase additional rechargeable battery packs. While users also complained of a hard-to-read LCD screen,

ing said it currently has no ns to address that problem. "In the near future, possil

early next year, there will be a cable connection allowing an external color monitor to be at-tached to the laptop for higher LCD screen will remain the only screen available for portable use.

Emmuel also noted that while the Wang laptop has a standard internal half-height Wunchester disk drive, the user must attach either an external 31/2- or 51/4-in disk drive to load software, which be found cumbersome.

which be found cumbersome.

The real advantage of the computer, users said, is that it is compatible with Wang's VS.

Hostetler said 15 of the law firm's attorneys are using the portables and that he will likely purchase more. The Wang laptop's word processing adva-tages make it more appealing the attorneys, he added.

"Right now, we are trying to randardize and look at compati-lity issues with our current

#### Barney

CONTINUED FROM PAGE 35.

Zioof created and developed IBM's Que ry-by-Example, the same interface that Ansa Software (developer of Paradox) ed to attack the proce and Dosse.

Zicof joins the all-star development team of Chan, Wong and Benson, all of whom switched from large-systems soft-ware and joined Ashton-Tate to work on

Oh no you don't. Like those of most inguage vendors, Microsoft's products are restricted by the 640K-byte limit of the firm's MS-DOS, and programmers the hrm's MS-IAUS, and programmers cannot easily develop big applications. As a result, a shrewd, but perhaps overly antibuous, proposal came from the Mi-crosoft languages group to develop lan-guages that can switch from the 640K-byte-bound real mode to the 16M-byte-bound protected mode of the Intel But according to sources, IBM nixed the idea because of concerns that these languages would cut into the demand for the large-memory OS/2 operating sys-

No more blank spreadsheets. If Lo-tus's Information Systems Division has its way, no one will ever have to key in readsheet data again — well, almost coording to Don McLagan, division president and general manager, the ries of products that contain reams of data, both numeric and textual, on an array of media such as compact disk/read-only memory (CD-ROM), real-time data

feeds and magnetic media. Through im-

proved interfaces and querying tools, a user would be able to intuitively request a particular piece of data, which would ar-rive quickly, no matter where it might re-

While Lotus isn't promising this level of product anytime in the near future, McLagan says he believes that the firm has most of the pieces in place to get the job done. They've got the real time, the CD-ROM and the retrieval software. A lot

of the work is just putting all this stuff AI SQL? One source speculated that there may be a connection between Lotus's Lotus/DBMS, and Arity Corp., s firm in which Lotus has invested and which provides Prolog products that

together robesisely

work with SQL. A Lotus official declined

SAA it ain't so. An indignant support-er of the old character-mode interface told us recently that although Microsoft s pushing the Pres the epiter to be sectionally that activities macrosoft is pushing the Presentation Manager as the epitome of the IBM Systems Appli-cation Architecture (SAA) user interface cation Architecture (SAA) user interfact there is a character-mode subset that also conforms to SAA. While the charac-ter-mode proponent advocates graphics interfaces for those who desire them, he says you don't need a mouse and IBM's Enhanced Graphics Adapter to get into the SAA swing.

Barney is a Computerworld senior editor, micro-

#### Zachmann CONTINUED FROM PAGE 39

Hayes Microcomputer Products, Inc.'s recently introduced Smartcom III, with a \$240 list price, proves to be an exception to the general obscurity of modern communications software. A com-pletely redone product for IBM and com-patible systems with minimal resemblance to Hayes' earlier Smartcom and with a comprehensible interfact martcom III goes a long way toward

mentroun III goes a long way toward saking it easy for users to understand. A ery clean menu structure, liberally sup-ilemented with extensive context-sen-tive Help files, is a big part of that effort. But all this makes for a pretty good-toe program. Smartcom III needs at least 512K-byte system and takes up nearly 52M bytes on a hard disk. However, I on't nee that the size makes much dis-rence unless wo are running on a sys-

ence unless you are running on a sys-n without much disk or memory.

tem without much disk or memory. The program also requires a Hayes or highly Hayes-compatible modesn. Some modems salvertised as "Bayes compatible belt" really aren't, and they won't work well — if at all — with Smartcom III. Still, I see no reason to binne Hayes for the deficiencies of some modem vendors' compatibility claims. Many modem work fine with Smartcom III. fearly every communications pro-n divides up the communications task crently. Smartcom III approaches it

at goes on at the personal computer, ng things like file-transfer meth-d and control of the screen display

oos user and control of the screen disput. By distinguishing activities from con-nections, Smartcom III makes it possible to easily set up more than one connec-tion for the same activity. For example, as activity created for calling up one's electronic mail could use different con-nections, depending on where the call is ng made or at what mod Out of the dozens of programs that I ok over, very few find a place on my C sk. Smartcom III is one of those.

Data Corn



# How to get your PCs on speak

You've got a lot invested in the many elements of your Data Processing operation. Mainframe applications programs. PC software applications. And the necessary micro-mainframe links. But your PCs and

mainframe still aren't talking the same language

Your DP staff is burdened with time-consuming and costly chores. Incompatible interfaces must be learned. Extract and import programs must be written for user after user. Improperly formatted data must be manipulated. And micro-mainframe links must be customized. Your end-users wait for special requests to be processed. Then they perform the time-consuming task of re-keying data, inviting human error. And, even if your PCs are linked, end-users must leave their favorite PC programs to work with micro-mainframe links and mainframe query languages. Another stumbling block in the path of creating a smooth exchange of information.

The Application Connection® (T-A-C) from Lotus® is a maintrame and micro software product that lets you realize your investments in mainframe applications. micro-mainframe links and PC applications by connect-

ing them for a fast, secure, uncomplicated exchange of information

#### Clones

CONTINUED FROM PAGE 25 tly resort to mailing the con back to the vendor, a process that usually takes more than a month. Most compati-ble vendors offer some type of warranty on parts, averaging from 12 to 18

Do the cost savings outweigh the po-tential problems? User opinions vary.
"With the fild off, all better clones are the same," Mony's Kellogg said. She add-ed that when she tested several clones against an IBM PC AT, the clones had to against an non-re- A1, the cutter uses to run all of the software used by the compa-ny's insurance agents in the field and had to include a Phoenix Technologies Ltd. BIOS and a Chips and Technologies, Inc.

ctured in Tarw manusculfed in Tarsen.

Carolina Freight's Frye said he also looks for the Phoenix BlOS and that he will not buy hard drive units unless they have Seagute Technology, Inc. drives. "If I get these components, the name of the vendor doesn't really matter," he said. "I leave I'vener I'vener a saidable her."

types or personne.

all of them are reliable.

"It's a trade-off," Camenker said.

"It's as trade-off," Camenker said.

the users go for a low price, but they take a chance on the support being manginal.... The lower priced ones are the

A secretary warranty with service problems one first call IV's Limited or problems one first call IV's Limited or of the problem in the called over open the region of the problems of the pro

aid.
Carolina Freight's Frye said that when is technicians need to repair a clone, bey remove the milliancioning board of reglace it. Frye said the shally to re-review contracts, weighted heavily on the review contracts, weighted heavily on the cision to buy the clones.
For Joseph Gamelli, vice-president of ES at Ton R Us. Inc. headquarters in conclude Park I. Ni, service was one resonable Park I. Ni, service was one reson be decided to stay with his store extended to the contract of the c

retained on Corp. equipment (man utan-retaining on closes; count from NCR be-saue we're big discount from NCR spoint-of-ale systems, "he explained. Ginnelli said he company also has purchased some C'a Limited machines. "We had even onled around with building our own PCs, ut it wasn't worth the effort." PC'a Lim

#### Bricklin CONTINUED FROM PAGE 35

Several major software developera-have used the product to create products including Microsoft Corp., which used the program to develop its best-selling inte-grated program, Microsoft Works. Brickin introduced Demo II at a Capi-tal PC User Group meeting in Washington, D.C., last week in anougher ill magnitude "With a program that can be used to cre-ate vaporware, vou get very picky abou-actually shipping before announcing."

actually shipping before announcing. Brickin said. He then brought a Federal Express courier ontage, who carted off the first boxes of the completed product to Softsal for distribution to its deslers. "I can now announce the product," Brickin said. Users of the original program can up-grade for \$54.95. Brickin said he will principly handle the user upgrades himself.



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T-A-C creates a complete connection, making it the only product available that allows your end-users to securely access a variety of mainframe applications from within their PC applications. For example, from within 1-2-3" a user can easily extract sales information from a DB2 database

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So, if you find that the number of end-user requests you are faced with is growing, but your return on DP investment is not, T-A-C from Lotus can help you get your PCs on speaking terms with your

mainframe. To receive more information about T-A-C, call Lotus at 1-800-345-1043 and ask for product CD-2540



Lotus T-A-C

#### Rational's C tool cracks MS-DOS limit

BY DOUGLAS BARNEY

NATICK, Mass. — C program-mers can break through the 640K-byte barrier in Microsoft Corp.'s MS-DOS with the help of Rational Systems, Inc.'s \$795 Instant-C/16M.

Instant-C/16M is an inte tive C development tool aimed at helping programmers write large applications, the company said. It is slated to ship next

The product, which runs un-der MS-DOS, takes advantage of the protected mode or large memory capabilities of Intel With Instant-C, programmers can address up to 16M bytes of memory, according to Rational. Still, programs that are developed are intended mainly for the 640K-byte MS-DOS environ-

Because Instant-C resides in memory above the first mega-byte, it leaves room to run a personal computer application like Lotus Development Corp.'s 1-2-3 while the compiler is working, id Terence M. Collissan, presi-

cremental compiler stant-C is a so-called incrental compiler. It speeds com tion by reprocessing only the tions of a program that have

Instant-C supports Borland International's Turbo C, Lattice, Inc.'s 3.20 compiler and Micro-soft's C Version 5.0. The product requires an IBM or com ble 80286- or 80386-b machine running MS-DOS. Although Instant-C/16M es not allow programmers to velop applications for IBM and icrosoft's OS/2, it does give

them OS/2-class memory capa-bilities, Rational said.

And, according to Colligan, there are currently no incrementhere are currently no uncremen-tal C compilers or interpreters for OS/2. The situation should change next spring, when Ratio-nal is scheduled to ship an OS/2

version of Instant-C.

THE IBM S/38

# Hyundai 286-based file server debuts AT-compatible machine and an Intel 8088-based microcomput-

SANTA CLARA Calf - House ectronics America recently fuced an Intel Corp. 6-based file server that can

Called the Super-286, the Hyundai system offers 12 slots: six each for 16- and 8-bit expan-

tes five half-height Winchester disk drives in capacities of 20M to 70M bytes of fixed or re-

The Super-286 offers clock speeds of 8 or 10 MHz and 1M

the vendor said. The server costs \$1,999

The new system is the third The new system is the third tem durin personal computer product hyundai has released since launching its U.S. marketing effort in August Hyundai also offers an IBM Personal Computer ucts.

A company representative said Hyundai expects to intro-duce an Intel 80386-based system during the first quarter of

Hyundai has signed 185 inde-pendent dealers and 41 value-added resellers to sell its prod-



With Xerox Ventura Publisher, the hard part of desktop publishing, layout and typographic design, is already done. Ventura's unique stylesheets-built-in or custom ones you create yourself -- give you graphic skills without requiring you to be a graphic artist. Pour in your text.
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And your document formats as quickly as you can say Xerox Desktop Publishing Series: Ventura Publisher Edition.

While other programs make you do a layout a page at a time, Xerox Ventura Publisher controls much of your

following it for you-be it one page or a thousand. This powerful tool is just one of the many features that have led major computer publications to designate Ventura the clear leader in MS-DOS desktop publishing.

ider Ventura's other re es: There's automatic kerning. ort for multicolumn frames,

ng and sizing of art, on-scr rulers, and automatic letter spacing Pictures are anchored to text, and documents up to 128 chapters in le each containing 150 to 300 pages of text, are easily handled and indexed



#### NEW Systems

The Darwin-386, a microcom-puter configured with a 70M-byte hard disk, a keyboard and

R 0 D

UCT Other features of the comput-er include two serial, two parallel er include two serial, two perallel and one game port, a system clock, hardware reset, a turbo LED indicator and a disk-access light. It operates at 12 and 16 MHz at zero-wait states and uses Award Software, Inc.'s 386 The Darwin-386 comes standard with a monochrome monitor. It is priced at \$2,995.

PC Genius, 100 A Tower Office Park, Woburn, Mass. 617-933-8442.

Data entry software said to entr

put, it is stored on a di

an the creation of graphs, charts and tables.

Scanned images and graphics can be imported from any stan-dard PICT format or graphics program, including Cricket Draw, Cricket Graph, Pict-O-Graph and Apple's Macpaint and

Macdraw.
Cricket Presents costs \$495.
Cricket Software, Great Valley Corporate Center, 30 Valley
Stream Pkwy., Malvern, Pa.
19355. 215-251-9890.

An Intel Corp. 80386 compiler called NDP Fortran-386 has been announced by Microway, Inc.

According to the vendor, code generated by NDP Fortran-386 and executed using Microway's 80386 susperic co-processor, MW1167, runs 16 times faster than on an IBM Personal Computer AT with an Intel

# **XFROX**

Xerox Ventura Publisher runs on a standard IBM XT/AT or compatible 286 or 386 technology. It plugs and graphics, font and peripheral options than any other publishing program. Xerox Ventura Publisher is also the fit Xerox Ventura Publisher is also the first desktop publishing program to support all industry-standard page-description languages, including PostScript and Interpress. That means total compatibility with all popular laser printers, including, of course, the Xerox 40/3 Laser CP and the Xerox 40/20 Color Inta-1et Printer.

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See your local dealer, call us, or clip the coupon below and find out how easy deskinp publishing can be when the hard part's already done.

Visual and Street of Whitest St. rare Salaries: How do you stack up? CO-ROM Breaks N

nics, PO. Sex 24, Exchesor, NY 5 -

80287 processor.

The speed of execution, the weeder said, is a result of the use of 32-bit mainframe compiler technology that include, global optimization and register stillars.

NDP Fortran-386 generates sative 80386 of that runs in protected mode under Microsoft Corp, is MS-DOS or Unit V.

The addressable messery available.

iter costs \$595. Microway, P.O. Box 79, Microway, P.O. Box 617-

**ORACLE USERS** 

able in the linear address ma 4G bytes. The NDP Fortran-386

**DECEMBER 14, 1987** 

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COMPUTERWORLD

# ig

To the authorization system at 313

Obber inrough December," states Charles of the system working in our major markets economistic with it. Digital got it on-line by outlion to meet our needs."

ust 6 months, al gave all 313 R'Us stores es and credit em for Christmas."

Brothomers as arrivegral part of the phenomenal Brothomers we four times the size of our nearest or 18 000 efficient terms, we move and make decisions the process to be built of the part time years, and the information edge they give us, have played a vital reason to be built of the part time years, and the information edge they give us, have played a vital reason to be built of the part time years. A winner to be built of the part time years are the played a vital reason to be built of the part time. West the part time years are the part to be processed to be process

#### Software utilities

ed Precisely, a "what-you-see-is word pro wast-you-get word processor, and Quarterback, a hard- to floppy-for the backup utility. Both were designed for the Commodore Business Machines, Inc. Amiga series of personal computers.

Precisely supports multitasking, multie windows, keyboard macros, on-line rterback is said to be capable of

transferring 20M bytes to floppy disk in 45 minutes. It supports full, subdirectory or incremental backup and restore with automatic formatting of diskettes, cata-loging of files and diskette sequence numbering and checking

Precisely costs \$79.95. Quarterback osts \$69.95. Shipping costs an additional

Central Coast Software, 268 Bi Drive, Los Osos, Calif. 93402. 805-528-

Development tools

Intermed Corp. has introduced a per-sonal computer-based program development system using its Interactive Reader

Language (IRL).

IRL is a programming language de-signed specifically for data collection. It features data editing and record look-up commands for portable bar code reading and on-the-spot verification. The pro

gram development system, called PC-IRL, includes a page editor, a compiler and a debugger with a reader display sim-

According to the vendor, IRL programs can be stored on disk or transerred between the PC and any IRL read-

PC-IRL costs \$495. Intermec, P.O. Box 360602, 4405 bassell Road, Lynnwood, Wash. 98046. 205-348-2600

Software enhancements

Version 5.00 of the Applications Communication Control System (Access) software library has been release

by Trilobyte Software Systems.
Designed for use in the IBM PC-DOS environment, Access is said to integrate program development, system security, data communications and application sup-port. Features include a screen may gen-erator for painting and calling custom screens with data fields, support for 50 function less assessed for response comnction keys, support for remote access, e transfer with error checking and asyn-

Access Version 5.00 costs \$245. Trilobyte, 295 Los Angeles Blvd., San Anselmo, Calif. 94960. 415-457-3431.

#### Data storage

A 5%-in. enhanced small device interfa Winchester subsystem for IBM Personal Computer ATs and compatibles has been announced by PMC Associates.

The subsystem, called the ESDX-PC,

nes with one or two removable dr behaving average access times of 16.5 msec and data transfer rates of 1.86M byte/sec. The single-slot controller supports up to four drives.

Other features include switch-selected

direct-memory access, port address interrupts and 32-bit error detection control with 11-bit error correction control It is compatible with Microsoft Corp.'s
MS-DOS and Xenix, IBM's PC-DOS and AIX and local-area networks from IBM 3Com Corp., Novell, Inc., Orchid Tech corp., Novell, Inc., Orchid Technology, Inc. and Ungermann-Bass, Inc. Pricing starts at \$5,566.
PMC Ausociates, 74 North Central Ave., Ramsey, N.J. 07446. 201-934-1835.

# Printers/Plotters/ Peripherals

The Macfactory-ST3 product line, d aigned to link data collection devices, b code readers, robots and programmal logic controllers to Apple Computer, In tion devices, bar reonal comp

assist in the creation of localized reports, store data and forward the information to

The Macfactory-ST3 has four p ac of which is dedicated to the Apple e of which is dedicated to the Apple Ap-etalk network. The other three can run ent protocols simultaneously, the or said. They can address 32 devices The Marfart ry-ST3 hardware an

ware cost \$1,995. Synaptic Technologies, Suite C106, 16 Hughes, Irvine, Calif. 92718. 714-859-0570.

#### **Auxiliary equipment** Control Cable, Inc. has added two un

terruptible power supply products to its ic of power protection devices for the M Personal Computer XT and PC AT. The 330XT Plus and the 450AT Plus are manufactured by American Power Conversion Corp. The 330XT Plus is said to feature a nominal service time of 10 min for an XT. The 450AT Plus pro-vides 20 min for an XT and 10 min for an

The 330XT Plus costs \$399. The 450AT Plus costs \$499. Control Cable, 7261 Ambassador Road, Baltimore, Md. 21207, 301-298-

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#### White papers, red faces



sale sponsored by use no mery shops, but rather a sion of the axiom, "Those o can't, teach." In this case, ight be better rephrased to d, "Those who haven't deered generate a lot of hot air." The mails are being flooded

with white papers on OS/2 networking from LAN Manag proponents and co-develope om and Microsoft. Rival unliever Novell was slated to de er a white paper outlining its duct strategy last Friday. And the last of the triumvirat nant local-area network oeratine torstem vendors Banyan Systems, was also ready ing its own white paper, report-edly addressing IBM's Systems

tion Architecture, of which OS/2 is the first piece. To be fair, white papers -times a manifestation of all talk and no action — can be beneficial, indeed eagerly re-ceived, if used to clear up confu sion or provide technical information. On the other hand, if used to market grandiose claim or slyly create confusion benefi cial to the author, then writers accomplish little more than

muddying their names. And us id let them know about The papers may be white, Continued on page 59

# Loosening SNA technical knots

IBM addresses peer-to-peer LU6.2 complaints, opens SAA umbrella

BY ELISABETH HORWITT RALEIGH, N.C. - MIS manus

RALEIGH, N.C. — MIS managers who have been stymied by "the technical intricacies of peer-to-peer Systems Network Archi-tecture (SNA) can expect to see IBM products that directly ad-dress the problem next year, IBM told Computerworld re-

Since 1983, when the first LU6.2 protocols shipped, IBM has received feedback indicating users want more portability, par ticularly in the m environments of IBM Sys-tem/36s and 370 computers. Users also want app ers also want applications to communicate across different system environments, according to Donald Haile, director of busi ness and systems mans for IBM's Communication

IBM has been steadily ex panding LU6.2 support across its various systems in the past year or two. For example, last June, the vendor announces LU6.2 for VTAM, VM/SP svs tems and front-end proces

However, peer-to-peer SNA has two major flaws, according to a recent report by Forrester Research, Inc. in Cambridge. s. First, crucial new ele-ts will not ship until late 1988 or 1989. Second, the comcations protocols are so Nex that many application

oers and MIS manual ing kaleidoscope of variables fo networking," the report stated

etwork Control Pr ides of having a simple, uniform set of commands that each SAA service or system incorporates in its application interface. This Continued on page 58

#### Early peek at 3+Open on OS/2

#### BY PATRICIA KEEFE

welcoment facility, IBM will also some major communication SANTA CLARA, Calif. - 3Co Corp. last week staged the first demonstration of its 3+Open network operating system run-ning over IBM's OS/2 in both a

However, the software exhil ited by 3Com was actually a pro liminary 3+Open release the us to migrate and communi-te across different IBM syswas designed to run on an early version of IBM's OS/2 Standar tems within the Systems Application Architecture (SAA) umbrells, Halle indicated. As part of the SAA direction, IBM introduced the Common Edition 1.0, as opposed to the version of OS/2 that was delivered last week to various retail

shelves.

3+Open, which is based on Microsoft Corp.'s OS/2 LAN Manager, is slatted for delivery in June 1988, along with the LAN Manager. earlier this year, which is the

#### 3 + additions At the 3+Open den

3Com also announced first-quar ter delivery of an enhanced ver sion of 3+, its-current Microsof MS-DOS-based network soft

ware.
The enhanced 3+ will provide OS/2 workstation support.
Pricing and technical details for this interim product will be proContinued on page 59

# Vendors and user organizations to test latest MAP and TOP versions. Page 57.

Apollo provides commer-cial support for MAP for the first time. Page 60.
 Harris offers an IBM-com-patible local-control unit.

## Yesterday's net mayericks sitting on LAN laurels

Continuous process industries slow LAN installation BY ELISABETH HORWITT



at Corp.

Continuous processing manufac-turers, which led the charge in industrial networking installa-tions in the early 1980s, have held back from the next step of rconnecting different pro tion processes and vendors pment, according to a recent ort from Venture Develop-Chemical/petrochemical

as far back as 1975, according to Venture. Contrary to vendors' and industry experts' expecta-tions, however, many of these companies have not gone on to link their islands of automation into a single, plantwide netw the Natick, Mass. research

ity of new SNA will be particularnting for neophyte

departmental end users — a p mary target for the IBM 9370. According to IBM spokenn from the Raleigh research at departmental control of the control of the

tions announcements next year that will address the problem of

One key development, which started this fall, is the develop-

nt of standard programmin orfaces that will allow applica

serted. The indu strial local-area network market for centinuous pro-cess industries will grow 9.6% annually for the next five years,

report said (see chart).
Continued on page 55

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## Vendors test TCP/IP-Netbios bridge

Event predicated on a standard interface agreed on at March forum

BY PATRICIA KEEFE

ARLINGTON, Va. - A suc cessful test of a Transmission Control Protocol/Internet Pro-tocol (TCP/IP)-to-Netbios interface, offset by a failure to agree on a standard for TCP/IP network management, was the main event at the second annual TCP/IP Interoperability Confer-

ence here The show's spon vanced Computing Environ-ments, said the technically ori-ented four-day event, which featured day-long tutorials and breakout sessions, attracted

about 900 attendees Fine woods demonstration designed to show off the ability of IBM Netbiosbased network operating systems and applications to run across TCP/IP-based local-area

Vendors testing their Netbios Bridge Cor Inc.;

Excelan, Inc.; Ungermann-Bass, Inc.; and Syntax Systems, Inc. Network General Corp.'s protocol analyzer was used to test the various implementations for interoperability.

Pressure pushed standard The interoperability test was predicated on a standard for a Netbios interface to TCP/IP that was agreed on at an interoperability forum that was held last

Without such a standard, mul-tivendor TCP/IP microcomputer networks would not be possible. And without the pressure that was exerted by large users, the standard would have taken much longer to crystallize, according to Bart Burstein, group product manager for Net/1 TCP

The whole thing was driv by large users. We were blud-geoned into it." Burstein said. 'Quite honestly, they told us, 'If you don't fit together with the other guys, we won't buy your product.' The message was heard by vendor management, and now we are all actually working together

In an example of the conperative spirit, ambiguities within the specification were worked out collectively by the participat ing vendors prior to last week's

"I was quite frankly flabbe gasted (that the test) worked as well as it has," Burstein com-

Despite the reason behind the Netbios interface, most of the conference attendees talked about doing personal computer networking over single TCP/IP

ing, Burstein said. His customers tend to want to install one network across multiple sites, he

nn-Bass will add the concern of an enhanced ver-

nets, equivalent to a single build- sion to allow users to support multiple vendor networks with a first-quarter product release, Burstein said. The Network Management nd Gateway Monitoring Work Groups, which had hoped to set-

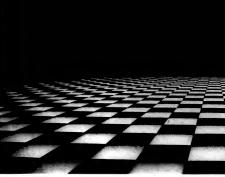
tle on preliminary specifications for TCP/IP network management and multivendor routing protocols at the conference were forced to delay a deci for three months. The postponement is said to have resulted from a divisi

among members of the co One group, primarily ven-dors, rallied behind the Interna-

tional Standards Organization's Open Systems Interconnect (OSI) protocols, while a second group, mostly users, backed another method for managing large

The group plans to choose by February between OSI's CMIS and CMIP protocols and a network management system being developed by BBN Laboratories

WE BELIEVE THAT THE GENIUS OF THE FUTURE LIES NOT IN TECHNOLOGY



## Giant MAP/TOP demo slated for '88

BALTIMORE — More than 40 vendors and nine user organizations will set up a demonstration June network next year to test the latest versions of Manufacturing alutomation Protocol (MAP) alutomation Protocol (MAP) did MAI (TOP). The link is scheduled MAI (MAI to the control of the control

take place at the Enterprise

Networking Event '88 International, which will be held here June 5-9.

The local-area network is being designed to test interoperability among different vendors' devices, using the long-awaited MAP and TOP 3.0 releases, according to the Society of Manufacturing Engineers.

The network will link nine worldwide sites belonging to a variety of industrial organizations, including Deere & Co., Boeing Computer Services, TRW, Inc. and General Motors Corp. Other organizations slated

clude the British Department of Trade and Industry and European-Wide Computer Networks for Manufacturing Applications, which is managed by British Aerospace PLC. The LAN will also link all the booths on the commention floor.

Among the vendors participating in the demonstration will so be AT&T; Bull International; G 3Com Corp. subsidiary Bridge O

Communications, Inc.; Concord Communications, Inc.; Control Data Corp.: Digital Equipment Corp.: Eastman Kodak Co.; Hewlett-Packard Co. Micom Systems, Inc. subsidiary Interlan; Retix Co.; Touch Communi-

ations, Inc.; and Unisys Corp.

The event will be cosponored by the MAP/TOP Users
coup and the Corporation for

Tools to test whether various vendors' equipment conforms to MAP and TOP protocols are being developed by the Communications Network for Manufacturing Applications Espirit European Communities, Participants in the project will include Nindorf Computer Corp., Ing. C. Olivetti & Co., BMW AF, Peugest SA and Bull. After the event, the test tools will be marketed by Stan-

dard Promotion and Application

Mavericks FROM PAGE 51

In contrast, revenues from discrete and batch-manufacturing LAN installations should grow at a 20% annual rate, Venture predicted.

a 20% annual rate, venture predicted.

Perhaps the biggest reason for the current slowdown in continuous process networking, according to Venture, is the conservative attitude of designers

and systems planners.

Network implementors surveyed by Venture said they needed proven and reliable networks to support critical plant processes, particularly real-time control applications.

Tried and true With reliability as a major con-

with reasonity as a major concern, continuous process industies have stayed away from unproven and unfamiliar networking technologies, preferring to stick with known products and vendors. This explains in part why continuous process companies have been behind discrete and batch mamfacturers in the adoption of the Manufacturing Automation Protocol (MAP) networking standard, thereport said.

Many continuous processing firms are waiting for the technology to prove itself. Venture sand One reason they feel that shelp can afford to do this is that, the many discrete and backets and lake many discrete and backets waiting the manufacturers, which use a wide variety of vendors, continuous process manufacturers tend to rely on one vendor for all process control requirements in particular plant areas.

The success of MAP will depend on its adoption by all manufacturing industries. Venture said. Currently, however, only a few of the largest continuous process firms have committed to implementing the standard.

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#### SNA

CONTINUED FROM PAGE 51

cations to be written to the same set of verbs, screening the proammer from the intricacies of the un-rlying system — such as VTAM or LU6.2. Such applications will be portable across all of the systems within SAA with-out the need to rewrite them for each sys-

tem, Haile claimed.

In October, IBM introduced a Common Programming Interface for Communications (CPI/C), which provides a uniform set of verbs for applications to call LU6.2 functions.

The initial introduction, designed for Versions 6 and 7 of the VM/SP operating

system, is scheduled for shipment in Oc-toher 1988, along with IBM's implementation of LU6.2 under VTAM in the VM

This should make it a lot more feasible to implement VM applications on "true blue LU6.2, because we had to concede that VM is not really an SNA environment although we're working on it," Halle said. IBM plans future introductions of CPI/C for other SAA systems, "so that

ntually you won't have to say Execute CICS' but just write simple CPI/C verbs' to access LU6.2 peer-to-peer networking functions across different systems, Haile

An IBM programming priority is to provide an SAA interface that allows an polication to use LU6.2 verbs to obtain

direct access to a data base on another system, according to Vijay Ahuja, IBM se-nior programmer for SAA. The CPI for communications only links applications. IBM's Distributed Data Manager (DDM) provides the direct I to data bases but is not part of SAA and it not supported by the common program-ming interface. As a result, "it takes a lot of software work" to port applications written for DDM across different IBM

systems, Ahuja said.

IBM is also working on a common di-rectory that will establish routing paths for applications to communicate across a tiprocessor environment, Haile said. "Right now, SNA programmers have a lot of responsibility for defining routes," he

## Apollo backs MAP standard with interface

BY ELISABETH HORWITT

CHELMSFORD, Mass. - Apollo Computer, Inc. has taken the Manufacturing Automation Protocol (MAP) plunge, entering into an agreement with Concord Communications, Inc. in Marlboro, Mass., to provide interfaces between Apollo workstations and MAP 2.1 net-

This is the first time Apollo has provid-ed commercial support for the factory networking standard, according to Robert Chiras, the vendor's group marketing ert Chiras, the venour's group manacing manager for communications and networking. An increasing number of cus-tomers have asked Apollo's sales force for ways to link its workstations with devices

on the factory floor, such as programma-ble logic controllers, Chiras said.

Apollo said it feels this is the right time to support MAP, because the technology has matured "beyond the stage where has matured "beyond the stage where most users are pioneers who catch all the arrows from the Indians." Early users who have stuck with MAP are now de-manding that workstation vendors such as Apollo provide MAP compatibility, Chiras added:

"The people I talk to more and more say they want to distribute information" between factory floor devices and other areas of manufacturing, such as design, Concord spokeswoman Suzanne Barclay

"MAP is spreading beyond the factory floor to materials planning, CAD and in-ventory control, and workstations are a big part of that market," Barclay added.

big part of that market," Barckly added,
For example, Deere & Co. has linked
its computer-aided design (CAD) workstations to computerized numerical controllers, "so that if a part goes wrong, the
user can actually pass the corrections
back to the CAD station," Barclay ex-

Partners since summer Applie and Concord have worked to: er since this past summer to modify Concord's Mapware Series 1200 Com cations Controller and software to work with Apollo workstations, Chiras said.

The two companies performed joint testing to ensure that the controller and the workstation will work together, he added. Under the agreement, Apollo will refer all requests for MAP interfaces to The workstation vendor chose Con-

cord because its interfaces feature fre-quency agility and network management quency against men network management and can support up to eight simultaneous sessions, Chiras said, "and because we think they are in [the MAP arena] for the long haul." The interface will be upgraded thins, temp are interface will be upgraded to MAP Version 3.0 when the newest MAP release is available, Chiras said. "Until then, we have the basis" for MAP

networking, he said.

The Mapware Series 1200 is an IBM Personal Computer AT-compatible device said to support all seven layers of the MAP model. Available immed roller is priced at \$2.695.

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#### Keefe

#### CONTINUED FROM PAGE 51

but in this instance they were triggered by Big Blus's surveiling of int OS/2 LAN 9 Big Blus's surveiling of int OS/2 LAN 9 Big Blus's surveiling of int ones. In the control of the ones. The control of the control of the ones of the control of the proteins of LAN Manager, which also scheduled to thip in Inti-year or there-abouts. but in this instance they were tri

However, IBM said it would not endorse LAN Manager and will not supp LAN Manager applications program-ming interfaces. IBM encouraged soft ware developers to write to the Ad-vanced Program-to-Program Communications (APPC) interface.

Invisible support
3Com was the first to respond with a
white paper promising support for APPC and guaranteeing compatibility with LAN Manager, OS/2 LAN Server and, last but not least, any applications written to OS/2. Pretty intere ten to OS/2. Pretty interesting, given that with the exception of OS/2 Standard Edition, none of the above men tioned products is supposed to ship for r eight months

In addition, 3Com has a June delivery In addition, 3Com has a June delivery date for 3 + Open, a new version of its 3 + network operating system. To its credit, 3Com demonstrated support for OS/2 on the workstation and server aides last week for the first time. That 's s step in the right direction.

mor has it that Microsoft was less than thrilled by the cocky tone of 3Com's er: So much so that two weeks ago. Microsoft released its own white paper, which essentially echoes technical infora much more low-key approach.

The name game
There are two interesting twists to the Microsoft paper. First of all, Microsoft has renamed two portions of the LAN Manager, now called LAN Server (serv software) and requestor (redirector). By coincidence, IBM uses the same names. Deaberately or not, Microsoft appears to be trying to confuse users, who already have enough trouble sorting out the dif-

#### 3+0pen CONTINUED FROM PAGE 51

vided within 60 days, 3Com said.

Customers who purchase this versi or an upgrade package for their current 3+ will receive full credit when they migrate to 3 + Open, the company said. 3Com said the product was designed to give users assurance that their invest-

ment in 3+ guarantees OS/2 server and workstation compatibility in the future. The demonstration featured 3Com's nk Plus adapters and an Intel Corp. 80386-based workstation adapted for use

as a 3 + Open OS/2 server. The configuration also supports 3Com's Tokenlink Plus adapter. Features include windowing, pull-down menus, remote server access via interprocess communications, a concurrent-mode server ation, session manage ment features and audit trail capabilities.

erences between the Microsoft and IBM

And then there's Novell. Ever the usy bee, Novell is bursting at the sear reannounced — but unshipped with pres products. Let a see, there a systems fault Tolerance Level III (file server mirroring); Netware for Apple's Macin oeh, announced more than a year ago; Netware for VMS; and Advanced

tware 2.1. The latter Novell ware was first un-veiled in February, announced again in August, slatted to ship in September and, last we heard, acheduled to ship last Friday. Netware 2.1 was delayed in order to add OS/2 support, Btrieve and Novell'a Message Handling Service, a spokes-

Meanwhile, Novell, too, has been sking promises, namely that it will so et OS/2 at the server without licens-

port US/2 at the server without needs-ing LAN Manager. (SCom vehicmently in-niata Novell can't pull this off.) Again, it's hard to cut through the gale force here without even knowing how Novell plans to accomplish this, sever mind without experiencing the look and feel of a real

the dark nyan also has yet to detail its posi on O6/2 networking beyond supportin OS/2 at the workstation. Banyan tend to wait for other players to go public wit their plans before commenting them-selves, a spokeswoman said. "The prob-lem is that no one really knows what IBM is doing," she added. Nor does any one know what Banyan is doing, at least as far as OS/2 is concerned.

The point here is that alth s ne pout nere is that attrough the vendors may see white papers as a valid form of air freshener. all users end up with is yet another layer of obfunction. Without actual products to compare all these explainers, claims and gazeristices with, it's debatable how much comfort white papers really offer corporate plan-ners and strategists.

So, passing on a tip from Col. North, let's shred those papers, sip those lips and start shipping some iron, or I should say in this case, software.

Koefe is a Computerworld senior editor, network

#### The best MIS solution for human resources and payroll isn't software.



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# Other comp trying to get

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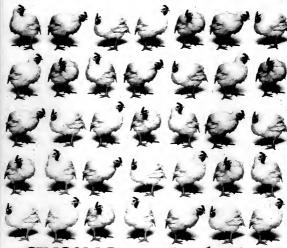
So if you're looking at database programs, there are really only two choices. You can buy a program that's still trying to catch up with dBASE III PLUS. Or one that is dBASE III PLUS.

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# CINCOM Boosts Production At Holly Farms.

PROBLEM: Improving programmer productivity in order to reduce a large applications backlog

CINCOM SOLVED IT: With MANTIS Application Development System

Daving a period of explosive growth, Bolly Farms Good itself with two problems: a large applications backing and a short supply of programmers able to step in and produce immediate results. The solution was MAYINS® the application development system from Goocom® option of the control was marked to the c

Mr. Bill Clontz syste Director of Computer Service Holly Farms Poods "MANTIS was ideal for us because you don't need 2-3 years of experience to use it," explained Bill Clontz, Director of Computer Services at Bolly Farms. "It lees us take new graduates, quickly train and, in a matter of weeks, turn them into valuable

programmers.

As a result, programmer productivity at Holly
Farms has reached an all-time high. "We've seen
substantial improvement ratios," Glontz said. "In the
time a programmer might turn out one CIG command-level program, he can turn out from six to eight

programs on MANTES"
Most of the 500-plus MANTES applications now in production at Holly Farms are aimed at strea lining costs. For example, Data Processing used MANTES to develop a model of how chickens consume feed over the course of their lives, allowing Holly Farms to cut production at one of its feed mills

by 152 days a week.

"We've got key users who are picking up on the term 'MANTIS,'" Clontz noted. "Around here, MANTIS has become a synonym for 'get it done quickly." Find out how MANTIS can boost your productivity. Call us today for more product and customer

tivity. Call us today for more product and customer success information. Or, write Marketing Services Department, Cincom World Headquarters, 2300 Montana Avenue, Cincinnati, OH 45211.

1-800-543-3010 In Ohio, 513-661-6000 In Canada, 1-800-387-5914

**CINCOM** 

O HIT Charge Street,

# NEW

P

Local-area network hardware An IBM 3174-1L-or

An IBM 3174-1L-compatible local-control unit has been introduced by Blarria Corp. a Data Communication Division.
The controller, called the H174-32L local-control unit, features token-ring network support and a distributed multi-microprocessor design for support of up to 5.5 devices. Support for up to 3.5M ytes of memory and a second diskette rive are also included. Other features include support for

altiple concurrent sessions, network inagement facilities and an integrated glish-language user interface. glish-language user interface. The H174-32L local-control unit is

priced from \$12,500. Harris, 16001 Dallas Pkwy., Dallas, Texas 75246, 214-386-2000.

# Local-area network

Version 2 of Lanbatch, a batch processor system for Novell, Inc. Advanced Netware, has been announced by Keylo-

Netware, has been announced by neyro-gic, line.

Lambatch allows network users to sub-mit batch jobs to a separate wentstation, freeing their terminals for other work.

The batch transmitter provides control over such features as queue priority, path control and job scheduling.

Version 2 includes daily repeat jobs, additional queue control functions and job-long fless. Multiple batch servers work-mer from a common gause are offered as

ing from a common queue are offered as an option. A utility that allows sections of a job to be executed on different batch The software costs \$125 for a single batch server and \$325 for multiple batch

Keylogic, P.O. Box 13063, Research Triangle Park, N.C. 27709, 919-544-

#### Customer-premise equipment

Racal-Milgo has added Switchlink-56 to its digital access product line. Switchlink-56 is said to provide dial-up 56K bit/sec. digital transmission using AT&T's Accunet switched 56K bit/sec.

ervice. It operates as a dial-up data and sustomer service unit for synchronous, tal-duplex data communications over our wires. The device can be used to back up a

critical point-to-point data phone digital-service circuit until that circuit is restored or to transmit overload during peak traffic hours. Other applications include host-to-host file transfers and personal computer-

to-PC communications. Switchlink: 56 costs \$3,200. Racal-Milgo, 1601 N. Harrison Pkwy... se, Fla. 33323, 305-475-1601.

Gulfetream Microsystems, Inc., a division of DEST, has announced a single-slot personal computer-to-facaimile add-in card that reportedly allows applications to print output to a distant facaimile ma-chine by emnating a printer.

chine by emulating a printer.

EZ-Fax is said to support multitask-ing. According to the vendor, it automatically manages conversion of data for transmission or printing, sending and reand background tasks and scar routes each incoming routes each incoming message both to the printer and to a holding file and performs unattended dialing code.

mattended dialing and redialing.

The card supports such graphic priess as Epson America, Inc.'s FX serie
BM's Graphic Printer; and the Hewiel

RODUCTS

M's Grapese Presser; and use re-chard Co. Laserjet series. The EZ-Pax card works in IBM Persts \$1,495. Gulfstream, 1065 S. Rogers Circle, ca Raton, Fln. 33487, 305-994-6500.

S&H Computer Systems, Inc. has in-troduced software for micro-to-minicom-

communications. he software, called Means et VAX, is said to allow coputer users to transfer mes-les to Digital Equipment Corp. computers and other PCs runenet. It also automates the ern Union Telegraph Co.'s cant Mail Manager and MCI ions Corp.'s MCI Mail elec-Communications Corp. 1 MC2 Mail electronic mail services, the vendor said.

Capabilities include editing, transmin sion scheduling, mailing lists, archiving and system use monitoring. Other fea tures include a word processor, acceptance notification, a file folder storing system, an address book and a calendar

Messagenet PC costs \$185. Mess t VAX costs from \$1,125 to \$3,000 S&H Computer Systems, 1027 17th e. S., Nashville, Tenn. 37212, 615-

327-3670 SimPC Master, a communications and file transfer package and to support appli-cation integration over coariet, local-area network, IBM Systems Network Archi-tecture, asynchronous and CCITT 125 connections, has been announced by Sim-

The product includes IBM host and Personal Computer components that pro-vide MVS/VTAM, GCS/VTAM and VM es with the ability to link PC users with porate data communications networks rovided for full-screen file transfer of IM's CICS, TSO and CMS application its. Users can also up out IBM PC-DOS file

off LIM PO-LIUS INS.
Also featured are background file ansfer, customizable functions and sup-nt for Xmodem and Kermit. SimPC Master costs \$325. Simware, 20 Colonnade Road, Ottawa,

Simware, 20 Colonnade Road, Ottawa, Ontario, Canada K2E 7M6. 613-727-

#### Modems/Multiplexers

full-duplex 9.6K bit/sec. CCITT V.32 codem has been introduced by Ander-on Jacobson. Inc. The AJ 9631-SA operates synchro-

The AJ 9931-SA operates synchro-nously or asynchronously on dial-up net-works. It features trelis-coded modula-tion, local and remote echo cascellation and satellite transmission capabilities. In leased-line operation, the AJ 9631-SA features unattended automatic dial back-up on the switched network. Other features include aut



o AJ 9631-SA modem as standard loop-back tests and an end-to d test. The AJ 9631-SA costs \$3,095.

Anderson Jacobson, 521 Charcot A San Jose, Calf. 95131. 408-435-8520.

A modem that includes a CCITT X.25 packet assembler/disassembler (PAD) has been assounced by Teleparties

rep. Model 245-MP is a 2,400 hz/ r. half- or full-dapler, synchronous or synchronous modess with as X.25 PAD ption. The option allows the modess to manuscrate directly with X.25 packet-

which networks.
The modern meets CCITT V 22 and
ell 212 and 103 standards, it uses the
ell 212 and 103 standards, it uses the
candard Hayes Microcomputer Prodcts, inc. AT command set and offers sochail and anticonerwer. The PAD option
crovides a sin-digit stored ID. Statistics
choice time and drate of call, call and seleconsecution duration, pachets and
one consecution duration, pachets and

The Model 24S-MP costs \$595. The X.25 PAD option costs \$150. Telenetics, 895 E. Yorks Linds Blvd., Placestin, Calif. 92670, 714-524-5770.

Concord Data Systems, Inc. has added the 296 Trellis modern to its line of 9.6K bit/sec. CCTT V.32-compatible The 296 Trellis is a full-duplex as chronous and synchronous mod to the V.32 standard, its feature

The 296 Trellis costs \$1,795. Concord Data Systems, 397 Williams Marlboro, Mass. 01752. 617-460-

ocom Corp. has announced that its m 8000 subrate digital multiplexer

According to the vendor, the test for expetibility was conducted at an AT&T at facility in Holmdel, N.J. The product is available in configura-

tions supporting five, 10, 15 and 20 ports Pricing starts at \$3,350. Astrocom, 120 West Plato Bivd., St Paul, Minn. 55107. 612-227-8651.

A T1 multiplexer for data communitions has been amounted by Coanteou The multiplexer, called T1M, is nai-take synchronous and asynchronous from local-area networks, computer-ed design and manufacturing, facsion personal computers or host comput

According to the vendor, synchronous its is protocol-transperent and is con-rible with Digital Equipment Corp.'s MR11 synchronous interface. Four level.

DMR1 is production interface.

Four independent date ports and in optional vac-maintenance port and produced date ports and in optional vac-maintenance port are provided in statistics, we do not the provided in statistics, we place rate up to 1.5-64 bits become found in the render said.

Talk is principled from \$3,985.

Constoom, P.O. Box 27068, 2312

Stanwell Drive, Concord, Calz. 94527.

415-825-7500.

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# **SYSTEMS & PERIPHERALS**

HARD TALK

James Connolly

#### Get the max from a mini

the 80386 chip made by Mo la's rival, Intel. A string of

vorkstation and minicomputer exdors upgrade their Motor-A pattern has set in, with adors leapfrogging their own ducts as denser, faster chips announced and chip makers og each other. Intel. Moorola and National Semiconduc or have each staked claims to

est chips at various nd those players have Continued on page

# CDC plots to lure fresh users

BY JEAN S. BOZMAN MINNEAPOLIS - Cont

Data Corp. is looking for a new

type of customer — one who does not already own a CDC mainframe or Cyber 205 com-To branch out, CDC is trying to improve the way its sales force learns about new products
— and to portray its product line as a continuous series running under the company's NOS/VE

operating system.

Gil Williams, vice-president of
CDC'a Computer Systems group
and one of the executives

Data View

particularly not th



Alpha pulls

with 68030

BY JAMES CONNOLLY -

a fast one



#### Harris's Night Hawk system expands real-time offerings Introduction includes Ada engineering tool set

BY JAMES CONNOLLY



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of what some people claim it can and performs 2 MIPS, that is

roughly twice the CPU power of

punch these chips pack

#### Connolly FROM PAGE 65

been challenged by makers of special-purpose chips, such as those based on reduced instruction set computing architec-

Intel claimed to better the 68020 with the 80386, which has been rated at about 4 mil-

ns per second (M1PS), and Motorola came back with the 68030, which has been rated at up to 8 MIPS. Na

tional Semiconductor, mean-while, says its NS32532 will non at 15 MIPS While the chip makers and their customers in the computer manufacturing community

the IRM 270/158 that was a standard for mainframes almost 15 years ago. prominence, it may be easy to

If the 68030 reaches half of potential and performs 4 MIPS, that would place it in the

lose perspective on what kind of heart of the IBM 3083 family, which was a standard for main frames just five years ago.

PC not a mainframe All of this does not mean that a desktop PC or workstation can do what a mainframe could do a few years ago, if only because wiring 500 terminals and print ers to an IBM Personal Sys-

tem/2 would be the headache of

But putting 80386 or 68030 power into a minicomputer, whether the CPU is a commod ity chip or a proprietary design, means that departments or me dram-size businesses can get the quick response times that were missing a decade ago. It also means those users

can think about using complex software packages — such as relational data base management systems - while having enough horsepower to hide the complexity behind the excess MIPS and perhaps making computers easy for the end user to

Comply is Computerworld's seni editor, systems & perioherals.

## Harris

FROM PAGE 65

cache and local and global men ry. The primary I/O subsystem is the 40M byte/sec. Harris VMEbus.

nix versions Night Hawk runs Harris's CX/RT real-time production onerating system as well as the company's CX/UX dual-universe implementation of AT&T's Unix System V and the University of California at Berkeley's Unix 4.2

A basic system with 2M bytes of memory, one CPU and mini-mal I/O and software costs about \$55,000. It will be available during the fourth quarter of 1988. Harris said.

Harris said.
The Ada tool set, which will be known as the Harris Ada Programming Support Environment for Software Engineering, was designed for all Harris CPU plat-

It includes 26 tools intended to help an Ada designer create, review, manage, document and review, manage, document and test software designs. The tool list is based on an Ada program design language that meets the requirements of the U.S. De-partment of Defense, according

#### The improved capabilities an-nounced for the H series' RT-

VOS operating system include increased flexibility for the frequency-based scheduler, en-hanced performance monitoring hanced performance monitoring and interactive display and modification of variables from any processor in a multiple-proces-

processor in a manaper-processor complex.

The additions to the MCX machines include a real-time operating system and a 68030 upgrade board that can replace the MCX a existing Motorola 68020

The upgrade costs \$20,000, although discounts will be avail-able on orders placed before the end of February, according to

# How to Buy Time for Your IBM 308X.



With the uncertainty surrounding IBM's next move in the mainframe area, adding a few more years to your system's productive life will pay dividends for you down the road. So why buy a new system, when EMC's main storage upgrade ou the performance you need to make your current your future workhorse. With EMC you save 30% over comparable IBM upgrades, which means buying time now for your 308X has never been a better decision. The simple 'plug and play' design of EMC's upgrade makes improving the performance of your system as easy as adding sand to an 2. Maximize Your Savings.

EMC uses state-of-the-art technology and production ethods to offer our 308X upgrade at 30% lower cost than IBM. A 16M8 upgrade from IBM is priced at \$160,000. E FMC

24

that same price you could buy 24MB of EMC main storage. That's an additional 8MB of n storage or a savangs of \$50,000. Either way also features coterminous leases and trade-up credits so the return on your investment continues alter your purchase.

3. Improve Performance.

By increasing your 308X's main storage capacity, you will rove system response time and increase your users

are provided in 16MB increments and run all IBM dia Use of EMC upgrades will have no affect on your IBM

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which include qualification in one of our own 308X ters peror to shipment. EMC is the leading independent manufacturer of main storage upgrades and other system enhancement products for mainframe and mid-range computers. All EMC products are supported by our worldwide network of sales and service

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call EMC today at 800-222-EMC2 for your free information kit.
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The System Enhancement Company. SM is a region of malematical from

#### CDC CONTINUED FROM PAGE 65

percent of our business in CDC 930s comes from customers who never befo have owned a Cyber machine," he said.

"There are three tiers to our strate-gy," Williams said. "We like to talk about providing a transparent link between an end user's workstation, the company's general-purpose computer and the super computer." That link, of course, i general-purpose computer and the super-computer." That link, of course, is NOS/VE, which will support Unix throughout the CDC line, as well as CDC-specific applications. (Unix support on the ETA-10 is not yet available.) Multiple networking architectures are also sup-

networking architectures are also usported, including links to Transmission Control Protocol/Internet Protocol, IBM's Systems Network Architectures and CDC's Loosely Coupled Network.
Williams envisions a day when executives, engineers and office managers can ink to a variety of mainframe hosts through their PCs. The ability to query IBM's DB2 via SQL is already available, as is the ability to ouery Oracle Com's innon's DDZ via Oct. is already available, as is the ability to query Oracle Corp.'s re-lational data base management system. CDC's Engineering Data Library, now called an Environment Management System (EMS), acts as a repository for com-puter-integrated manufacturing (CBM) ings and vectorized data.

Technology allenates sales force That environment may be attractive, Wa-iams said, but it will not be marketable inless the CDC sales force understands it. "CDC has had the ability to produce fast eting function here that spent a great eal of time translating the technology to

## Alpha

#### CONTINUED FROM PAGE 65

supports a maximum of 360 users and that the system could support that many active, concurrent users in applications such as data entry with 3- to 4-sec. reonse times. He said the AM-3000 is ined to support more than 150 users in general-purpose computing environ-

The AM-2000 series remains available and can be upgraded to the AM-3000 through a 10-minute CPU board swap, acconfing to the vendor

Like the AM-2000, the new systems to based on Alpha Microsystems' AMOS operating system. The company, which 30,000 systems, abandoned a Unix off

g last year. The AM-3000 uses a 20-MHz 68030 CPU and 32K bytes of on-board cache memory. It is available in three configuramemory. It is available in three configura-tions and supports up to 120M bytes of memory and 3.46 bytes of on-line stor-age. The three configurations include a tower version with six Motorola VMEbus slots and two rack-mount versions with 10 or 21 VMEbus slots.

The systems use a multiprocessor de-sign in which microprocessor-based con-trollers can be added for tasks such as terninal I/O, disk management and tape

management.

A basic tower configuration costs \$40,000 with the CPU, six slots, 8M bytes of memory, 150M bytes of disk storage, 30 serial ports and an operating

the sales force. We had good products, but we didn't know how to talk about them." Monthly newsletters and frequent seminars have been instituted to counter the

CDC has no illusions about being the only vendor at a user's site. "I don't think

we are arrogant enough to say to a cus tomer that we are your entire environ-ment," Williams said. He sees CDC's op-portunities in the areas of scientific computing, engineering, CIM and DBMSs. Today, two-thirds of CDC's cusrs are described as "technical" rath

an "commercial" accounts. Aware that it cannot take its installed base for granted, CDC recently under-took a study of its user sites, identifying product requirem

Dox Young, a securities attalyst with Section C. Bernstein & C.o., sade be beSection C. Bernstein & C.o., sade be beL. 200 is susceptible to errosion and that CDC management is aware of it. "Ower the next two to there years, show 20% of these modifies are set trial, and about 10%.

But Williams' strategy of priming new accounts with actentifically oriented Units mechanisms are set of the property of the set of the property of the set of the se

ould come together for CDC in 1991, en they could be the single largest pro-ier of technical computing systems." fer of technical computing systems." Vertical solutions will, in general, be d - s turnsbout from the eny's position several years ago.

The only exception will come in the area of energy management applications, or software specific to running a nuclear power plant or other electric utility. CDC already has a significant share of the utili-

is management market and does not in-ind to give it up, Williams said. Finally, customers can expect to see familiar bardware and software packaged with CDC offerings, Williams said.

with CLR offerings, withinton said.
"We intend to keep on top of the programs offered by independent software vendors, because the expertise in any given overtical application does not have to reside here at Control Data," Williams said. "Our fundamental task is to provide the hardware platform and the environment, not to know the cus er's business be ter than he does.



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ola Comp teens, a subsidiary of Motorola, super microcomputer to its Sys-tem 800 family of platform one floppy and one stream tape drive.

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Pricing ran to \$25,000. operating at 16.67 MHz, the Model 150 features 4M bytes of res 4M bytes of and the

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Data Technology, 2551 Walsh Ave., Senta Clara, Calif. 95051.408-727-8899.

ter to integrate ph graphic images and computer-generated images in the same picture. It can produce presenta-tions in video, slides and over-heads. Other features include the abilities to synchronize with pture, edit, combine, com ess and display images. The Videoshow Professions

stem is priced to \$20,000. General Parametrics, 1250 Ninth St., Berkeley, Calif. 94710.415-524-3950.

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Eastman Kodak Co. his en-hanced its Kodak Ektaprint 1392 printer, allowing it to merge data from mainfrances with files created using the Ko-dak Estaprint electronic publishing system. The Ektaprint 1392 Mc

14 printer can be configure with the Ektaprint 1700 mas with the Ektaprint 1760 mm, netic tape drive operating at 1,600 or 6,250 bit/in, or a high-speed 56K bit/sec. IBM Systems Architecture/Systch-Network Architecture ronous Data Link (SNA/SDLC) data link.

The data can be transported from the mainframe directly over an SNA/SDLC data link, priced at \$10,500, or indirectly sing the Ektaprint 1700 tape rive, priced at \$24,000. The rinter costs \$200,000. Kodak, 343 State St., Roch-

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# **EXECUTIVE REPORT**

COMPUTER CRIMES

# To catch a thief: Lessons in systems security

BY MICHAEL BALL

uted to systems managers, but those emot

Reporters, editors and MIS staffers alike chuckled the first time obscentities filled their screens, but in a shop totally computerized, from writing through production, with a System Development Corp. turnskey mewspaper publishing system, the joke quickly lost its edge. For six months in 1980, the Herald's network was subject to a profane prenakter's whims.

a profane prankster's whims. Obscene messages were embed-ded in files and in sorpe cases teemed to appear randomly. Edi-tors and managers were power-

Eventually, the skill of the scalawag and the medium in which he worked were his undog, Peterson notes. Elimin or advanced programming sickly reduced the suspect list. computerized auditing further innowed down those who en-

ed specific files.

This left a single systems proammer. The motivation ap-ared to be retribution for a wronged spouse, a former Her-ald reporter who had had a run-in with the city editor. The systems programmer was fired.

The Calgary Herald's run-in with computer crime is not as dramatic as recent multimilion-dollar insider data diddling or hackers' planting of killer com-puter viruses, some of which are cussed below. But there are sons to be learned from the

Why buy a prevention system? The latest in security legislation

Police let computers do the dirty work

words and restrictions on

But, as with most or ent shops, burdening a mg system with security ng the advantages a com

"If we restricted our people too much, we'd slow down the writ-

managers, the key now is keeping an eye on morale. "We actively look for bad apples and figure out the problem," Peterson

The Ruse of the Rotten Re-funds. An imperfectly planned system was too much to resist

#### Thief FROM PREVIOUS PAGE

amount and changed the name and address to those of one of his three cohorts. Once the check

back. Because his department — in effect Opice hissuelf — suborriand payments and the treasurer's office paid them, "the books always balanced," Comphell says. If a texpayer inquire about a refund, the computer would as refund, the computer would be cashed. In addition, because the checks were printed with the case number, a bank calling to verify a large check would be told the check was suthorized. Irronically, according to Ironically, according

Ironically, according to Campbell, when the crimes were first discovered. Cojoe was placed in charge of the investiga-tion from the tax refund aide. "He was still snaing checks dur-ing that part of the investiga-tion," Campbell says. Once Cojoe was removed

from the investigation, Camp-bell, Sgt. Charles McEwen and the tax office uncovered a pattern of payments to a du onstruction company and the bree accomplices. They hecked identification numbers and found businesses that did not st and taxpayers who said

exist and taxpayers who said they never received checks.

"He was caught by a fluke and might not have been except for stupidity and greed," says Nan-cy Alberts, Wayne County assisat prosecuting attorney.

What happened? Cojoe wed up with one of the friends to cash a reissued, man-unity typed check. The teller led and received an OK, but alerted to what seemed to be a very large refund for an individuai. It was about \$4,000, accord-ing to Campbell, while the avere refund was about \$100. Alberts prosecuted the four er racketeering statutes, as nguter crime laws ere so new. The check cashers

received probation; Cojoe was es one to 10 years in stat prison and ordered to pay resti-tution of \$123,000. The city also

In retrospect, Alberts adds that she has her own fears of this type of crime, "We catch the stuaid ones," she says, "We don't



know how many go undetected."

"It's like the system had neon lights flashing, "Steal from me," says Sanford Sherizen, a Natick, Many Award industries Mans.-based independent com-puter security consultant, refer-ring to Detroit's income tax re-fund setup. "The city obviously wanted to make it easy to issue checks — and it certainly did." The city of Detroit acted quickly to fix the bugs and tight-

en controls of the system de-scribed above. While Rainh Hurte, director of the city's in-come tax section and Coipe's boss, understandably will not de-tail the fixes, be does say that there are now embedded subsys-tems that automatically produce

"It's a combination of con-trols, which are mechanical in nature," Hurte says. "There are so administrative steps con-

This type of crime is not at all rprising, and it will get worse, erises says. "A lot of compees will be in trouble when mor

E HAD to balance security and access. If we restricted our people too much, we'd slow down production. We'd hamstring our operations."

KEVIN PETERSON CALGARY HERALD

The Dustardly Div lemma. In January 1986, Con-trol Data Corp. spokesman Rich-ard C. Reid announced that employees from its Blooming-ton, Minn., and Oklahoma City agnetic peripherals arm had en arrested for diverting CDC ods and cash. The crimes were planned around and facili-tated by the computerized pur-chasing and inventory records, which were maintained on CDC Cyber 180 machines

As much as \$20 million in mpany and outside vendor ulpment had been diverted to dummy companies and sold for profit. In some cases, perfectly good parts and subsesembles were classified as scrap. Employ-ees simply removed the "junk"

This type of fraud may be a com-mon occurrence today. It is merely a cybernetic version of an old insider scam.

The basics are that a computer operator with access to purer operator with access to pur-chasing or scrap disposal or oth-er resource records fools around with the data. For example, the first step would be to rest a post office box and print bills in the name of a fake company. Next, the victim company is billed for undelivered goods or unperformed services. The operator res the purchase order and pockets the proceeds. As with many kinds of sys-

tematic thefts, detection most commonly occurs through the various oversight cycles. Some purchasing software pinpoints queer buys. A final check, alagh it occurs at an expe time to catch the problem, is the

CDC is more concerned on the stickier problem of prethe sticker process tion, Reid says. The company is tooking to technology but will king to tecamony ce more emphasis on educa tion and mans

anagement, he adds. vious thing we did was use har coding throughout mufacturing." he notes. Previo ly, many small, valuable parts not have their own identificat numbers and could have en disappeared without leaving their throughout the state of the state trail. Now, if parts become ng between storage or pro

port is printed.

The company also revised its system on acrap and reclamation of parts and materials. This system, too, refuse on unique numbers. "Even individual thin-film heads from each wafer are numbered." Reid says.

Yet, CDC does not look to

tet, CLPC does not soot to technology to cover the expo-sure any more than it blames the computers for the thefts. "It was definitely the human factor, both the workers and managers," Reid admits. Of course, manag-ers up and down the chain of command have been made aware of the thefts and related security problems. They have been tak-

While that may help, accord-ing to security consultant Jack Bologna of Computer Protection Systems, Inc. in Physiouth, is, Inc. in riynom.
"there are errors and Mich., "there are errors and omissions in almost any system that allow security breaches." In this particular type of case, be said it is plain that "the receiv-ables clerk should never be able

er crime, CDC is not proud of what happened. Putting the best face on it, Reid says, "If you can say anything positive comes out of an experience like this, [it's] that [you] end up with improvements in security proc and a heightened awares

The Hackers Whodunit. still enjoy the reputation of a heroes. But the U.S. gove ment and its prime contrac think less highly of those who fie with their files, bull

Indeed, when young m bers of the Hamburg Co of the Hamburg Chaos rater Club (CCC) backed their way into a variety of Euro-pean and U.S. corporate and government DEC VAX comput-ers in September, no victim seemed amused. The researcher who lost four months of work when numerical values were changed in his files certainly was not, notes Donn Parker, computer security consultant at SRI In-ternational in Menio Park, Calif. Why did they do it? The ed to be doing



## Mainframe vice

For the fledgling sec-conscious MIS dire re are a few les

The more DP-dependent your shop, the more vulnerable it is to even a single criminal.

T be person most likely to cripple your com-suter operations is a sysons programmer or ans-st. Because of his position, this person may be hard or impossible to catch, and the crime may go undetected for months. Systems security mea-

res are all within the Not having any security defense is asking for trouble. However, a pleasant working environment and good management may be better safeguards than any hardware or soft

Getting the security "religion" after the first recognized computer crime is too late. MICHAEL BALL

the inadequate security of the systems and their software — particularly Unix and the VMS

One of the club's targets was the U.S. National Aeronautic and Space Administration, through its Space Physics Analysis Network. The semipublic data analysis for business and school was the club of the country of the use, and signing up is no easy trick. What the hackers did was bypass the operating system se-curity, read out the password list and plant one or more viruses in the system, says NASA's Doug-las Hunt, manager of the auto-mated information security pro-

Even though Europeans are

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# **Security systems: Getting** management to shell out

BY LARRY STEVENS Convincing senior managema

out the money for a security system ca be difficult for MIS. The trouble stem

to difficult for MIS. The trouble stems from the fact that although computer crime is a serious problem, it has, by and large, been sweep tunder the carpet. According to Richard Cashion, assis-tant director of the D. W. Mattion Com-puter Center at Tennessee Technological University in Cookville, Tenn., where the versity is Cookvase, Jenus, was urity system includes a sophisticated, erersitywide password setup, "A lot of er managers want to try to ignore the blem into sonexistence. They want to the second setup. p the illusion that only highly trai keep the situation that only highly trained tochnicians are sophisticated enough to do computer crime." He adds that "they also don't want to admit they have a bad system, just as they don't want to admit they have bad management at any level." Indeed, when a breach of security does

Shith . . .
"Most MIS manage try to keep it hidde

sident of info ems at The Insurance Co. of America in N

o. or America in New Richard aris, N.J., agrees. "The fact that many companies tend not to widely discuss the incidence of companier crime in a factor making it difficult to get management to buy a system," be says. "Many managers simply do not fully appreciate the dangers involved." Prudential has password systems which occasions the product of the production of the product of

) series computers.

a addition, MIS will often find top agement turning a deaf ear to propose funding of a security system. This, nkus says, occurs because managers used to spending money on hardware d. A security system, however, does ser; in fact, it will likely degrade a sys-

ma slightly.

"Any security system will cause some elay and some growth of files," Menkus sinstinais. "It's tought to get someone to send money for something that does not crease output, that seems to be of little se and that degrades the system." Yet securing data may be vital and only the comparation but also to the individ-

er crime is to look for som e. Often, that person is the guy who

coording to Sanford Sherizen, a Na-According to Sandred Sherzeen, a Na-tick, Mass. based computer crime pre-vention expert, one way to sell a security system to senior management in to point out that they "own the problem." He ex-plains. "If a breach of security occurs, it's nior management, not MIS, who will be ld up for criticism.

Sherizen points out that when the lank of Boston was implicated in money nundering because it accepted large de-outs in small bills, "it wasn't the auditor who had to answer to congressional committees, to the press and to angry stock bolders. It was the CEO."

Buck BloomBecker, director of the Na

tional Center for Compu Los Angeles, a nonprol tute, goes further in attr

cial loss or loss of privacy that re

re in pace.

Sherisen adds that unless security is inquite, it might even be hard to take tion against guity parties. When

top managers on a security system is to d them figures on how much m ely to be lost in a security breach. Theoretically, the most scientific way

gton, D.C.; Risks frem Da Calif.-based Chesspeak Group; and, from Profile As

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**DECEMBER 14, 1987** 

#### **EXECUTIVE REPORT**

there is some controversy as to how accue they are. The problem, Meni bere is not a large enough stati se from which to work.

"These programs often start playing ound with weighted averages and prob-sility," be explains. "But unfortunately, use there are so few statistics on er crime, there is little basis for

mouter crune, there is attle tosss for king these estimates." Because of this deficiency, manage-nt may not accept the results of a risk alysis and may instead insist on more wn-to-earth numbers — numbers that

The solution, Sherizen says, might be to use figures for general white-collar crime as a guide to the extent and potential danger of computer crime. "A compa-ny normally has strong procedures for yourself against teenagers. But m dement and

ecting against embezzlement and r white-collar crimes. Computer crime is nothing more than white-collar crime with a new medium. Every time you train an employee on the computer, you're also training him to use that comer to rob the company. There is little

se in protecting yourself against te-collar crime without protecting urself against computer crime."

Perhaps one of the reasons MIS has

had a tough time convincing senior man-agers to take computer crime seriously is that the most publicized examples of secu-rity breaches are of young hackers or petty criminals. It's hard to justify spendir tens of thousands of dollars to prote

ment has to be made aware of the fact that er crime is much more see n first assumed.

Tennessee Tech's Cashion declares, "Hackers have gotten the headlines, and that has been a double-edged sword for us. On one hand, it has made management

re of the need for security. But on the other hand, it has caused them to und nate the mag tude of the pr According to BloomBecker, hackers are the least of the problem. "Criminals are being caught that are more organized and more sophisticated than we ever imagined. Cases are now being prosecut-

ed under racketeering laws, and suits are hovering in the multiple millions." Another argument senior manage

curity system is that the com estem is that the company is al-sured against losses. But aside om the loss of regutation, which can ured, as well as the fact that p as may rise after a substantial k there are many other expenses to cons er. Most of these are associated with a system being down for a period of time. As BloomBecker puts it, "A compa

mnot insure against lost opportunities of lost customers that result from not ving full use of the computer sys ose losses are almost impo

Swallowing the security pill Obviously, the ideal way to install a security system is to assess the need, budget it and install it all at once. However, it is ofcult to get a

to Selby Wells According to Selby Wellman, vice president of marketing at Paradyne Corp., a Largo, Fla., data encryption hardware vendor, "It's very rare that we get to install a complete security system in one fell swoop. Normally, we have to



OMPUTER crime is nothing more than white-collar crime with a new medium. Every time you train an employee on the computer, you're also training him to use that computer to rob the company." SANFORD SHERIZEN

SECURITY CONSULTANT

The main reason for the p method is to get a company and its offi-cers used to the need and efficiency of security systems. "Going to password is a step you have to take all at once," Pruden-tial's Burgess says. "But after that, you can increase the sophistication of the sys-tem gradually. Probably if the money ent on a security system in Year X h en defined five years earlier, you won we had a hard time getting the syste roved." A second reason for grad lementation might be that MIS ner

However it's accomplished, most cor tants say that corporate manage ed extensive education on comput crime and security. And at this tis



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#### EXECUTIVE REPORT

#### Thief

FROM PAGE 74 ith computer crimes, CCC was stocted and identified by a tech-

ently. The hackens held a press conference to finger the operating systems' defects. Meny of the companies and agancies in-the companies and agancies in-their accurity measures, relying on those in Digital Equipment Carp. VMS and Unit.

VMSA's Heart a rays. "There was a serious hole in VALTVMS intervent a rays." There was a serious hole in VALTVMS intervent in the reason CCC was able to change files. Apparently at least one of the hackers was familiar enough with the operating systems to de-with the coparting systems to de

DEC's latest two VMS up



the Star Wars effort by "NAVSTAR Co " However, the U.S. Air

# Security for ALL your systems— ALERT is the key



ait Police's Con grades fix those security prob-lems, Hunt says. "At least in this one area, I think we're covered," he says.

In addition, NASA tracked down the viruses the hackers planted in the network. It is still checking for others and has or-dered a reload of programs from original disks to replace those on-line during the time the netork was illegally accessed. As for the backers, the West

German and French authorities are prosecuting them under computer-crime violations, ac-cording to West German news-

The Case of the Conane Case of the Concerned Crank. A poem, a pansy, a bag of Mrs. Fields goodles and a mes-age, "Please have a cookie and a sice day," are what she left — along with five demolished IBM mainframes.

On a Tuesday early this Ju free-lance peace activist Su "Katya" Komisaruk walked a low-security area at Vanden-berg Air Force Base in Califor-nia. She does not deny that she then broke s window to enter s building and took a crowber, wire cutters and then a fire exer to the guts of five

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# On Capitol Hill, loose chips sink ships

BY BUCK BLOOMBECKER

While lacking the immediacy of the Bork hearings or the banality of the new television season, Washington, D.C.'s, fall season for computer security promises to be one of the more memorable

Recently I senured the halls and corridors of Washington. hunting down both obscure and well-known members of the legislative and executive branches. to ascertain what they were doing to help make the nation's

Don't let it be said that all in our nation's capital are asleep at the keyboard. A number of significant activities are about to conclude, and others to begin. making Washington the place to

HE government puts information security under the heading of information resource management. From office to office, IRM reigns as a buzzword. But what it means is harder to pin down

watch for computer or security professionals curious about where federal computer security

The main event HR 145 the most significan

piece of business on the comput er security calendar is the fate of HR 145, Rep. Dan Glickman's (D-Kan.) bill. It is the latest volley in the continuing debate over Bureau of Standards NBS) and the National Security Agency in the development of computer security policy for the federal government

As passed by the U.S. House of Representatives (CW, June 29), HR 145 says the NBS is to have primary responsibility for the development of computer security for all systems handling unclassified information. The bill has been modified slightly since Glickman introduced it so that it now recognizes the appropriate-Agency's providing technical advice to the NBS.

Yet to be considered in the U.S. Senate, the bill will die unless the Senate takes action by the end of 1988

Strong support for the thinking behind HR 145 is likely to be found by those who read "Defending Secrets, Sharing Data." a recent report from Congress's Office of Technology Assessment (OTA) on federal computer

security malicy The NRS also comports the bill, suggesting that it will clarify the powers and responsibilities

the NBC has held for come turns in setting standards for commit-

The NBS continues its efforts to gude the normaltary user community on computer security Stuart Katake, chief of the computer security division of the

Sciences and Technology, is heading a new project designed to increase the spread of com puter security information benonclassified information. tween government and private-

sector participants The Computer and Telecommunication Security Council is currently in the planning stage. Shirley Radack, assistant to the director of the institute, says

NBS's Institute for Computer they hope to have it organized by March 1988. The council will provide a forum to look at the issues involved in the protection of

> The General Accounting Of fice (GAO) is also involved in several studies at Glickman's request. The purpose of these studies is to determine the curputer security efforts and

# At Last, All the Power to Defend VM.



#### **EXECUTIVE REPORT**

evaluate alternate strategies.

The GAO's most current evaluation of the strategies in-

volved in the HR 145 debate can be found in the testimony of Thomas Gammo, associate director of the Information Management and Technology Division of the GAO. That testimony, which was delivered at an HR 145 bearing that Glickman held May 19, discussed the inforheld May 19, discussed the information security practices of nine federal agencies and found a pressing need for improvement in many of the systems consid-

A detailed report is being prepared by the GAO that will discuss the 17 agency systems that are actually reviewed. The report is currently under study, and no release date has been deUnderlying these questions, a senate staff aide notes, is a philosophical dispater Is information samply a type of personal property recurring increasingly stronger walls around it, or is it an individual right requiring a different form of protection? This question, addressed somewhat in the OTA report membat in 180 OTA report membat in the OTA report membation and other properties of the OTA report membatical properties of

tioned above, remains to be

more thoroughly discussed.

The government puts information security under the heading of information resource management (IRM). From office to office, IRM reggts as a buzzword. But what it means is harder to pin down.

Agreeing to disagree
Deborah Smith at the Office of
Personnel Management (OPM)
Is in charge of teaching computer

skills to government employees at the OPM's Wishington, D.C., facility. See notes that OPM Gircular A-130 mandates that each agency develop a plan for enduer training an information resource management. She attended a contencine a year after the circular came out and found no operature definition of information, resource management available at the time. She reports.

With this lack of agreement asto the ground rules, it is not so to the ground rules, it is not surprising that little is being done to plan for personnel competer to computer security skifts, should HR 145 become law. The bill would require the OPM to eagage in continued training to keep employees knowledgeable in security. Nothing is currently planned, Smith says, as far as she is aware.

Appendix III to OMB Circular A-130 establishes a set of immimum controls to be included in federal automated information systems security programs. At the end of this year, OMB will recover reports from the managers of the various federal systems on their progress in complying with the circular.

SINFORMA-TION simply a type of personal property requiring increasingly stronger walls around it, or is it an individual right requiring a different form of protection?

Gail Stelton, assistant to the U.S. Department of Health and Human Services (HHS) Inspector General Richard Kusserow, reports that the latest in the HHS's sense of studies concerning computer security will soon he usuald.

This report, "Personnel. Sutability and Security," pursues the question of the level of personnel security in the HHS. A survey of the 41.644 people in the HHS with access to money or benefits showed that 1.265 of them had arrest records. One-third of these had theft arrests. 131 had their convictions.

Meanwhile the Small Russ ness Administration (SBA) is set to release a computer security guide for the small busin Rep. Ron Wyden (D-W.Va.) sponsor of the bill that led to the security guide, is holding a hearing to publicize the guide's pubb cation. The hearing is also tended to publicize IBM's participation in a joint venture with the SBA to teach computer security and computer applications for the small businessman. Rick Mayronne, SBA project director, says 200,000 copies will be printed.

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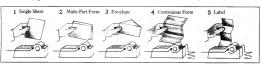
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Peripherals

# Software applications put the 'byte' on crime

BY JACK BOLOGNA

rime detection is mainly a deductive process. There are times, however, when police have to rule out more than 10,000 suspects in order to come up-with me that may or may not have commit-

This process of elimination is ted and time-consuming and the kind of thing a computer can do faster, more accurately and perhaps with less bias than humans

Detectives, therefore, are turning over an increasing amount of their investigative duties to computers so they can be free to pursue more important tasks, such as planning the investigations, locating and interviewing witness es, interrogating suspects and searching

Software applications that facilitate crime detection and investigation are currently hitting the market with some frequency. Designed originally as inouse solutions by local police departments, some of these can now be pur-

Roborna is assistant ornfessor of management at Siena Heights College in Adrian. Mich., and presdent of Computer Protection Systems, Inc. in Plemach Meh

Some 20 organizations provide software to police agencies for crime detec-tion and investigation, traffic safety, de-

partmental budgeting, payroll, scheduling, dispatching, report writing, property accounting, word processing, ning and personnel records. With a \$5,000 budget for a personal computer

 Compute crime incident data on the ta-sis of modus operands. These applica-tions are intended for specific types of crimes, such as burglary, rape, robbery and car theft.

· Compile lists of criminal associates. criminal specialties. . Compile lists of aliases or street names

ETECTIVES are turning over an increasing amount of their duties to computers so they can be free to pursue more important tasks, such as planning investigations, locating and interviewing witnesses, interrogating suspects and searching for evidence.

small town can modernize its police de-

What are crime detection applica-tions intended to do? The following list is Compile lists of stolen cars, see credit cards and other property.

 Compile lists of wanted crimin tumpers and delinquent child-support Compile lists of counterfeit securiti and credit cards.

 Compile lists of fingerprints, signa-tures and criminal histories of convicted Link certain crimes with certain criminals by establishing common threads.

ciates, convictions, modi operandi and physical characteris-

 Telephone toll analy Movement analysis. As you can imagine, these advances in police computing's state of the art do

There is fear in the minds of som people that the use of criminal-profiling aids touches on the violation of privacy rights. Some people are concerned that profiling can lead to the categorization of people as associates of criminals when

the contact was, in fact, innocent, familial or accidental. These privacy issues concern prof mal law enforcement agents, as well. Their answer is that great care is taken to safeguard such systems and their data hases in order to ensure that access is

restricted to those who have a real need groups are forming to promote comput-

er usage and software exchange One such group is Public Safety Micro-Software International, headed by Doug Johnson of the Madera, Calif., po-lice department. Johnson reports that for a modest annual membership fee of \$105, members receive a newslett and exchange copies of software that

Another such contact is Bill Clede, who serves as technical editor and a regular columnist for Law and Order mag-

#### Michael Obar has his priorities straight. He reads Computerworld first.

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wide manufacturer of Ober has many responsibil hours of one day allow That's why he sets priorities

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"To get an overall view of To get an overall view of what's going on our there, I usually grab Computerworld first." Computerworld delivers Michael the important and upto-the-minute news about micros, minis, mainframes and communications. Michael says, "I refer to it several times dur-ing the week."

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## Thief

FROM PAGE 77

Komisaruk got on the base, in the building and away undetected. Hill notes that a major highway bisects the base and "after all, Vandenberg is 98,000 acres." He adds that security on the base is in

direct proportion to the nature of the project. High security at the Air Force base involves fences, armed guards, locked doors, codes to punch in — all before you can even touch a computer, which will have its own set of security procedures. Regardless of all that, Hill adds that

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Vandenberg has reassessed its security procedures in light of the incident. "We

with

are in that business," be says.

The Insidious Insider Intrigue. If you cannot trust your bankers — internal and external — what's a multibilition-mark company to de? Yet, Volkswagen AG in Wolfsburg, West Germany, operated as most multinationals do and trusted its internal currency traders and the contracts from its major banks. Computerization is the key to keeping a profitable money spread in international markets, and traders and banks are the professionals that

allow quick response to rising and falling What happened at VW last spring is that traders saw their chance to play with a few dollars - \$259 million, to be exact - in currency futures, according to ou-

merous articles in the daily and business presses. The crime befit the size of the

company. It required double insiders On the computer side of the fraud, trading programs had to accept a mucl ing. Also, recordings of the actual transactions were erased. Nontrading managers could not be alerted to discrepancies until profits built up. On the more traditional side of the fraudulence, contracts allow-ing trades through the National Bank of

ngary were forged. As long as the contracted currencies went the right way, VW profited and the conspirators skimmed off their portion. according to a report from an outside auditor VW hired to analyze the crime. How

ever, fluctuations in the U.S. dollar skewed the outcome. The schemers cashed the contracts, and VW took the ss. VW will not reveal the exact nature

of the problems or their fixes. Audits eventually uncovered the dis-epancies in the VW case. First outsiders id then insiders were identified and sued

or arrested. The chief currency trader, Burkhard Junger, confessed complicity and admits forging the contracts. He was fired. But VW's Chief Financial Officer lowsky took the fall.

The prosecution contin ast three VW currency traders indicted: nber, the courts dismissed VW's sim that the Hungarian bank was at fault, and, according to reports from the Wall Street Journal, it appears VW will have to swallow the losses.



How did it happen? Neither VW America nor its headquarters is willing to talk until the various criminal and civil trials are over, but it is clear that the management and computer control systems were inad equate. The crime may be the largest cor-Consultants say that such insider ma-

nipulation of programs and data requires



rable and varied defenses. The first is exception-reporting software that

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tracks all financial transactions and regularly reports those exceeding limits to management. The need for this type of measure seems to be well recognized, and an increasing oumber of vendors offer such programs to be installed in corporate That type of product may well have

caught crime similar to VW's - albeit on a smaller scale — earlier, but VW's clever inside/outside combination was willing and able to bypass such safeguards. In such situations, the best deterrence may be to let white-collar employees know that a variety of audit and overlook canabilities are in place. Besides discrepancy reporting, such passures include automatic verification

and recording of who is accessing which files when. Numerous companies provide ogging software, although even these aids are not always used to advantage, acding to security consultant Bologna. He recalls a new client who had years of Bologna cites security monitors from

Absolute Security, Inc. in Maynard, Mass. The Intel Corp. 80286-based systems link to mainframes or PC networks. hey record who enters what files when and can be programmed to check for spe-cific types of alterations. In some cases, s comparing the contents of the navroli file with a predefined set of data or an algorithm every 20 minutes. The

#### EXECUTIVE REPORT

curity manager would be alerted when tain types of changes were made. While VW is not talking at this time

While VW is not talking at this time about specific preventative neasures it is taking. Bologus notes that the company had better look to the right kind of tech-nological fizes. "Volkivangen could have adopted exception-reporting software that gives the system a chance to sudit is-self," be says. For a lunge company, this procedure must include user profiles, with immediate reports when these get out of sync. "Ultimately, the system has to start auditing itself," Bologna says.

The Call-Code Conundrum. Last July, the Santa Clara police and the U.S. Secret Service arrested and ultimately charged Paul Lindahl and his assistant with steal om U.S. Sprint Com U.S. Sprint Communications Co. ugh the company's Unix-based sys-s. The Secret Service says Lindahl quently discounted and sold the code use to unsuspecting customers. He called his fake service California Discall. The agencies estimate the loss to Sprint at \$5 million.

at \$5 miltion.

The illegal codes were rotated daily, making detection harder, according to police files. The scheme was revealed when Lindahl's operation solicited Sprint customers, who, in turn, notified that compared with the compared to the compared ny, Secret Service agents say.

The basic ploy in this crime is all too sim-ple. An adult DP pirate or even an unsorated teenage hacker need only a PC, a modem and a telephone line.

The system is set to dial codes on the ng-distance service's access line. Eventually, it gets a dial tone, or as they say in the trade, "jackpots a number." Various law enforcement agencies and security consultants estimate that U.S. companies lose \$500 million annually by such fraudulently obtained codes.

Sprint recently wised up to these schemes, and people hacking on its ser-vice will now get far less return on their vice will now get tall less return on their time and money investment. Some rela-tively simple technological fixes may limit the trafficking in authorization codes. One of the simplest measures, which

es old math, may be the most effective. Sprint is changing its seven- and nine-dig-it user codes to 14-digit ones, except in a few regulated locations in which they must get permission to do so. Like adding numbers to a safe's combination, this will require a great deal more computerized dialing for a jackpot. Whereas an untend-ed dialing PC might produce dozens or even hundreds of codes in a session when seven to nine digits are used, the longer codes may yield only one or two inckpots — possibly too low a return on investment for pirates.

"We're going beyond getting away from our old authorization codes," says

from our old authorization codes," agvs Sprint spokesman Syd Courson.
To counteract the image of Sprint as an easy hit—when initially asked to the backing of codes, Courson's immedia-tor response was to ask aské nicident— be asys the firms in prosecuting piezes and trying to publicise the fact. Unlike switch which will not discuss these incidents and would rather fire capitat than proceed-and draw attention to themselves. Sprint waste to care one of the switch asked to the con-traction of the same waste to care one of these same of the s

wants to scare code thieves.
"Some of those recole are alrea serving time, and we are cooperating with ongoing investigations, mostly with the Secret Service, "Courson says. "We want them to serve jail or prison time. Wheneyer we can, we're starting civil actions as well and going after their productbooks." A Sceret Service agent insolved in a number of such cases says there is more than just a code problem. "AT&T has maybe 90% of the business and only 10% of the firstel," says San Prancisco-based Richard McDrew. "That's no accident. They have internal control on how they

McDrew adds that, typically, such se McDrew accs can, typicary, according breaches can be traced to managent. "In the Lindahl case, there were oblems in their applications procedures d how they go

As for the passwords are essential but not ad

curity services at Ernst & Whinney in leveland. For internal users, be suggests logies, such as keyboard dynamics

a digit in system, some only alphano-cie of fixed length and take merely re-tire penetration to jackpot." He see that "the very least a dial system old have is three invalid tries and sou-d the log in."

burned are up to date." Buck Bloom-Becker, director of the National Center for Computer Crime Data in Los Angeles, Computer Crime Data in Los Ar ds, "There is an enormous spect

It is up to each individual company to aintain that balance between ease of use and security, BloomBecker says. "There

point out that in some cases, such as with systems programmers or autonomous formation workers, there is no such this as total security. "The best way to pe vent computer crime is still good manage

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# IN DEPT

# 'Let's see, word publishing, desktop processing -

It used to be simple enough to tell them apart

BY IEFFREY SUTTON nce upon a time, there two markets: type in and edit words with varying degrees of sophistication. Desktoo

text and graphics. And the two markets lived

Wrong, Word processing and desktop publishing are en-croaching on each other's terri-tory. With the increasing sophistication of personal computer-based word processors and the based word processors and the proliferation of laser printers, the distinction between word-processed and published docu-ments is considerably blurred.

typeset documents. You could print a word-processed file on a daisywheel or dot matrix printer or have it typeset. If so inclined, you could embed complicated typesetting codes in your text files and send the files directly to

a typesetter.

Desktop publishing used to mean using a 512K-byte Apple Computer, Inc. Macintosh bunwith Apple's Laserwriter embellished with Aldus

Corp.'s Pagemaker.

The operative words are "used to." As laser printers dropped in price and word prors added drivers for them, end users, with these tools alone, began to produce near-typeset-quality documents, com-

Warwick, R.L.



the fairy tale of two separate

Word processing is still the technology of choice for the matechnology of choice for the ma-jority of users; its market is large-and mature. The market for desktop publishing is modest, but it is growing rapidly, espe-cially when you consider that it emerged as late as 1985, when Apple released the Laserwriter and the Mac 512K (see story

page 91). The number of word processing packages sold has remained relatively stable for the nest four years, hovering close to the three million mark. By contrast, the estimated number of desktop publishing software packages cording to estimates by Dáta-

quest, Inc., based in San Jose, Calif. This market has doubled

ue to blur, it soon will be tough to count the units sold separately. George Eigar writes in his "Mi-cronews/Views" newsietter that he expects the next desktop pub-lishing sensation to be Wordperfect, a word processing package from Wordperfect Corp.

For one thing, it means that many word processing packages now offer features comparable to those of Pagemaker on the sold in 1987 ranges from word processors offer a variety 137,000 to 250,000 units, ac- of fonts, the ability to mix text

features commonly associated

publishing systems market anal-ysis at CAP International, Inc. in Marshfield, Mass., says word

scanned images."

Karsh says she is se PC-based word processing the "ongoing addition of publishing - hyph

fonts, graphics, images, style sheets and structured page lay-

Karsh says, she sees desktop their word processing features

· Boundaries have begun to blur

· is 'dynamic overlap' good for customers?

· Give end users the kerning test

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better facilities for inputting and editing text. Each raids the other's cookie jar, resulting in "a lot of dynamic overlan between the

two," she adds In a recent end-user survey, Karsh reports, "we found a lot of people who said they were doing blishing, particularly of long cuments, and they were using

Microsoft Word to do it. Word processing will contin-ue to permeate the desktop publishing realm — heralding good news for end users. The battle between word processing and desktop publishing vendors provides end users with products of better quality at a lower price. Such healthy competition raises performance and lowers cost in true market-driven style.

'Very concerned' Are desktop publishers after a piece of the word processis are of the word processing arket's pie? They say no. Nor do the word processing vendors admit to being after the desktop

Despite these claims, Dataquest analyst Richard Young says word processing vendors are nervous about the competi tion from desktop publishing and that they are fighting to protect their market

I think high-end word processing vendors are very concerned about having their lunch eaten by these other products." Young says. In his opinion, these ors are afraid of being perred as no longer being on the leading edge of their own tech

logy. High-end vendors' fight to retain domination will lead to further market confusion, with ev-ery word processing vendor ng to jump on the desktop lishing bandwagon, Young ms. "The word processing vendors are going to tend to con-fuse things as much as possible," he warns, "by showing output that looks like what comes off a desktop publishing product. Marketing [literature] is going to

What is the catalyst of this or sion? The mighty laser printer ead of the desktop ishing revolution. Because the print quality from word pro ig and desktop pub

Rising star Sales of dealtop publishing packages for PCs have more doubled each year in North

programs can now look identical, it is difficult for users to differen-

tiate among packages. Ronni Marshak, manag editor at Patricia Seybold's Of fice Computing Group in Bost surmises that "a lot of users who ught they needed deakt hishing will find they don'

(see story page 92).

According to Young, disorder also stems from end users' lack of knowledge of the fundamental characteristics of the task then are trying to automa Young tells a story of wres-ting with the first release of Pagemaker in 1985 while working as a systems analyst at

Boeing Computer Services in Se-

n the wrong took The ing documentation project sired using a book-oriented not Pan

tere does the blurring of wer varies according to the ware bases, the investment in employee training, the skill level of employees and, not least, the kind of output required. ione end users require full top publishing packages; ers' needs can be met by send word processors. Con-

y, a company will use sever-D. L. Hiller & Asso Inc., a systems integration and consulting firm based in Sterling Heights, Mich., uses both word ing and desktop pub ensively to produce d extensively to produce docu-ents for its clients. President

Dean Hiller reports that his com-pany uses Microsoft Corp.'s Word and an AST Research, Inc. urbolaser printer to produce to p dized on Microsoft Word for correspondence and other

r conveyons and of writing.

When Hiller needs high-qualidocuments fast, word prossing is his choice. When he needs a high-quality document with complex graphics, be turns to desktop publishing. Hiller says Ventura Publisher from Xerox Corp. would be far too slow to run off four quick proposals for a client. The proposals are indurdised and, therefore

But for presen ys, his firm relies on Ventura isher. Users create diacomor ments with Autosk, Inc.'s Autocad, then call em up in Ventura Publisher and add text, titles and subtitles. Hiller cites Ventura Publisher's two primary advantages as being the ability to pull in these phical inputs from an array of roes and the ability to crop

the graphics to the right size. Nancy Carlini, MIS mana at FNS Sales, Inc. in Rochest N.Y., says her company pro-duces technical manuals using duces technical man NROFF, a popular Unix page-formatting system from AT&T Information Systems. At the same time, the company is mov-ing toward in-house desktop publishing. FNS currently uses

cdraw-like package Apple Mactraw-size paraget IBM Personal Computers to generate page layouts for adver-tisements. These are then sent to an outside ad agency for typ

ny's move toward desktop pub-lishing will not exclude word pro-

processing peckages, including Wordperfect and Micropro In-ternational Corp.'s Wordstar on m AT&T 3B1 system.

'As integrated as I wish' Hiller districtes the notion that the word processing and desktop ng markets will merge. ing that an integrated sys of sorts is possible right now doing production work in ed and then loading the docu

ests you wish to enhance into e Ventura Publisher package. "When I stand there with Microsoft Word on the shelf and Vestura Publisher next to it," be "I feel I'm about as inte-\$2Y8. as I wish to get."

are is a kepty meanin three

Dataquest's Young says word processing and desktop publish-ing should remain separate. "I would rather see a hot link between the composition package and the source file," be says. While only rudimentary links

are available now, the day is not far off when sophisticated links will allow end users to transfer files between applications with no loss of formatting, thus protions, such as the graphics editor and the data editor, into memory will "flow each module to oper-ate under a single umbrella, prostent level of interting a consi

Word processing's pluses Most industry observers say end will make use of both ki

more appropriate for the task at hand. However, word process-ing packages have a decided advantage in several respects:

There is a huge installed base of word processing users. Many

companies have a major stake in word processing software, both in existing data bases of text and in training. For this reason, many firms will continue to rely on their word processors and righ-end word processors are mature, strong offerings. Peter Dyson, editor of "The Seybold Report on Desktop Publishing." says that "the very finest word processors have functionality

at, in some respects, is better an desktop publishing." Besides being able to perform usic page layout functions suc as arranging text in blocks or col umns and incorporating graph-ics, word processors feature the speed and solid text-editing func-

tions missing from most desktor publishing programs.

• Word processing software can be easier to use than desktop publishing software. Most of the top desktop pub

ag systems have links, all mentary, to the high-end Office automation key Perhaps new markets

emerge and both markets will win. The office automation market is one key to this outcome. Young says, "The distri tion capabilities offered by office tomation tools are going to ovide a vehicle to facilitate the movement of information be tween desktep publishing and word processing."

As Young envisions it, a docu ent would travel along an electronic path. At each worksta tion, various writers, editors and graphic artists would add value. The vendor that can be the sys tems integrator stands to profit considerably. "I think that a why Wang, DEC and IBM are now all in this market," be says, "be-cause they see themselves as

oviding that bub."
Users would benefit tre ously; should such a sear poroach be realized. "Int

# One good Apple

desktop publish-ing, the Macintosh is us the apple of users' eyes. Apple Computer, Inc., with the Macintosh and Laserwriter, continues to be perceived by many as the desktop publishing company of choice. It is common to find a few islands of Macintoshes in a sea of blue.

For example, Joseph Giamelli, vice-president of MIS for Toys R Us, Inc., says his firm uses IBM's Displaywrite 4 because "it gives us the ability to interconnect around the world." He reports ongo-

periments in composition and layout in his company's Cana-dian offices. Their computer A Macintosh, of course. Users choose Apple for its ease of use and software cape-bility. Dataquest, Inc. analyst Richard Young says, "The

Mac still has about an 18-month edge on the MS-DOS world. If they play this to their advantage, they ue to do very well."

By contrast, he continues, "IBM can make lots of mis-takes. But Apple could be dis-lodged very quickly by mak-IEFFREY SUTTON

Carlini notes that her co costing. "End users are also to use what they want," save. They currently run y



sk for our complete, Illustrated catalog

SPUR PRODUCTS CORPORATION 13469 Beach Ave., Marins del Rey, CA 90292 (213) 822-7100 imperative," echoes David J. Becker, manager of automation resources at Boeing Support Division in Seattle, a separate operating company of The Boeing Co.

#### Note the difference Most observers agree on the fe

that distinguish the two types of software and those that make one more appropria ate for a particular task. Text entry and editing form the core of word processing, with a myriad of authoring tools such as a thesaurus or seelling checker thrown in

The consensus among experts is that deaktop publishing software generally includes a "what you-see" what you-see "what you-see" (WYSIWYG) display, the ability to mix text and graphics, precise control of page layout and such typographic niceties as iceruing, reverse faces, dropped caps and horizontal and vertical rules.

Dyson notes that whereas both desitop publishing and word processing can integrate text and graphics on a page, what differentiates them is the degree of suphistication of typographic control. "Typically, word processors don't have too much concern for kerning, variable point size or variable leading," he says, When they do offer these features, the in-

## crude jumps," he adds.

Two kinds of publishing
The buying dilemma does not end with deciding on desktop publishing over word
processing. Just as there are clear differences between word processing and desktop publishing systems, there are also diferent types of products in the desktop
publishing market.

Dataquest's Young divides the desktop publishing market into two camps.

The first is the page-layout approach as epitomized by Aldur's Pagemaker, which uses the cut-and-paste metaphor of the designer as its interface. This is a "botal graphics environment, very fluid, not line oriented," he says. The second, Young continues, is typified by Ventura Publisher, with its "tag-based or designator-based approach providing you with a true structured document."

Pagemaker excels at laying out single pages with great typographic precision, whereas Ventura Publisher is the tool of choice for long documents, such as technical manuals.

As if that were not enough, there is a hybrid type: compound document processors. These packages — half word processor, half dealtop publisher — mix text and graphics, and they can produce very long documents.

It is in the gray area of compound-document processing that the lines separating word processing from dealtop publishing truly vanish. And it is here that users may be confused as to what product they need. Likewise, it is in this band of the market that the high-end word processors and deaktop publishers may meet handoo.

Products such as Ventura Publisher qualify as compound-document processors, but, interestingly, so do several high-end word processors, including Microsoft Word Version-4.0 and Lotus Development Corp.'s Manuscript.

It all depends on how you define "long document." Jeffrey Sanderson, a product manager in the applications group at Microsoft, defines a compound-document processor as a product that handles long

# In publishing, it's the look that counts

o most users really need desktop publishing packagen? Richard Treitman, director of document products at Lotus tory development Cops, tells the story of a retailer who saks customers if they need kerning. If their response is, "Bub2" then he does not sell them Ventura Publisher from Xerox Cops, or Al-

dus Corp.'s Pagemaker.

A factor driving the proliferation of deaktop publishing is a change in peo-

kple's esthetic perception, largely due to
the entrance of the laser printer.
Bob Hicks, marketing manager at
Norwell, Mass.-based Serono Diagnostics, Inc., a \$35 million business serving

the clinical market, says two-column output lends credence to documents because it gives the look of scientific journals.
"I can type something up and put it on stationery, and it can be scientifically valid as hell, and people don't look at it,"

he says. But when he produces the same document with desistop publishing tools, Hicks claims, people will at least read it and judge it on its scientific merits. Allan Ayars, manager of desistop publishing product marketing at Xerox, says, "Desistop publishing becomes a way or world feinblan tool become

Allam Ayars, manager of desktop publeshing product marketing at Xerox, says, "Desktop publishing becomes a very powerful firnishing tool because it makes a document 'decisionable.' Management has both summary and detail built into the same document."

EFFREY SUITON



## Which one's the artist here?

ticated enough to allow end user to create comage formats, complete graphics. While this

systems market analysis at CAP laze national, lnc., asks, "Do people creatis documents want to deal with forms ting? Or is it not their job just to write?" Not all managers view the availability of dealstop publishing tools with forces ing. H. William Howard, vice-preside of information services at Becketel Po-

We've got secretaries using these seckages with no training. Give it to hem and let them play with it," he says.

to their word processors. John president of Xyquest, Inc., maker write III, says that package's pop-stems from how it can be tuned a rocessors. John Hild, est, Inc., maker of Xy-

IRREPREVIOUS

#### Desktop FROM PREVIOUS PAGE

ts that need to mix text and

graphics.

While 50 pages typically constitutes a long document, page length alone is not always the determining factor in using a compound-focument processor. The extent to which you must mix text and

At present, Sanderson says, a le document such as a 1,000-page man for the Boeing 747 would require a s tem like Interiest Corp.'s Interiest.

tion with compacts coon for writing good-ments and creating graphics.

But Sanderson predicts that in the fu-ture such documents will be produced on an Interleaf-like system on a Macintoeh or an IBM PC. A version of Interleaf already runs on a Mac II; however, it is expensive

runs on a Mar II; however, it is expensive and uses 4th bytes of memory. Pam Biles, a Dataquest research analyst, says that as early as next year, we will start to see integrated packages on PGc that resemble high-end publishing systems such as those offered by inter-lent. Xyvison, Inc., Compagnaphic Corp., and Xeron. These systems will offer text

ach systems presuppose the use of tasking PCs. Bliss says IBM, Digital pment Corp., Hewlett-Packard Co. Mang Laboratories, Inc. have all ofmaker on their PCs. But she

There will always be . . . As long as authors demand speedy, fea-ture-filled word processors and don't want to bother with cumbersome page layout tools, there will be a demand for word processors. As long as graphic art-

ists and designers want high-level pag layout tools, there will be a need for deal top publishing software (see story above). Noting that 80% of all end users do some type of word processing, Micro soft's Sanderson scoffs at the idea that there is one product for the whole sector

of users.

Alian Ayars, manager of deaktop pob-ishing product marketing at Xerox, sums it up. "There is plenty of room for every-body. You start to get this synergistic ef-fact where the market grows rapidly as a result of everybody starting to set new standards and new expectations."

How will the two tools evolve? CAP In-ternational's Karsh says, "There will be long-document production kinds of tools that look like word processors but also allow end users to deal with formats — like Microsoft Word on a Mac; or Microsoft

Karsh predicts there will be other tools, in distributed document-production work groups, that divide the tasks. In this scenario, "authors are doing authoring,

scenario. "authors are doing authoring, editors are doing editing, page-layout people are doing page layout, "she says. Cring the ready availability of laser writers, bit-mapped screens and graphics cards. Seybold? Marthak says she ex-pects dealtop publishing to become a niche market but vill merge with type-setting, computer-aided design and manu-fecturing systems like Texet Corp. and Camers. Inc. at the very high end of the

#### What ISDN is doing for McDonald's data networking capabilities is no small potatoes.

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mation outlet to every work station, thereby eliminating time-consuming and costly wiring, as well as enhancing Thanks to ISDN, McDonald's will enjoy better customer service, more current market information, bester tracking of product promotions, more efficient mory control, and reduced administrative

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# MANAGEMENT

TAKING CHARGE

Stanley Gibson

# You better shop around



r will get the business." Such as the definition of account actrol offered by an executive npany. That kind of assessment cerned with how they should react to a variety of recent

ves by IBM geared toward asserting account control.
For IBM, sales is the key to the key to sales. Account contion is to manufacturing: It gen erates economies of scale that

ratively actie entort.

Looking at its recent slow sars, IBM has apparently com the conclusion that its account control has been slipping acroachments by DEC, plug-impatible manufacturers and ints the forgone con n that Big Blue will get Continued on page 101

# Catching new clients

Blue Cross leader diagnoses DP operation's ills

BY MICHAEL SULLIVAN-TRAINOR

When Bill Skowyra resurr an expert system claims pro-cessing application that had been abandoned by his predecessor, the last thing on his mind was making end users more produc-

Instead, the senior vice-presi-dent of information systems at Blue Cross/Blue Shield of Mis-souri used the mainframe software to capture the company's first national health insurance accounts, including IBM.

"He created a position of leadership for this company," says Bob Shupe, sensor vice-president of operations for Blue Cross/Blue Shield. "We had a systems capability and the people to support it, and Bill capital-ized on that." It was six years ago that Skowyra first applied the power

of his aggressive personality to a vision of a new role for informspany into the nati surance spotlight.

has led to the formation of a new corporation, a St. Louis-based spin-off of his information sys-tems division called BPS, Inc. BPS will market third-party ms administration services to noanies nationwide, provid-

PROFILE Bill Skowyra



He is always going on to im-prove on where he is or where e company is. He has a strong entre to keep a leading-edge po-tion, and that is a burning fisme

#### PERFORMANCE REVIEWS

# **Balancing controls** against freedoms

nagers must som

can be an important tool in in-spiring the loyalty of MIS em-ployees, says Douglas H. Dol-

eral interpretation of the cor porate culture often provide an incentive for productivity, Dolton adds. "Personally, I find at performance reviews in erms of things like corporate measured much more liberally for these individuals. In some ses, the ability to come to ork without a tie is worth \$2,000 in annual salary to a prospective employee."

A lax view of corporate cul-ture notwithstanding, the most ving the performance of



expressed clearly. Let Clarke says it is virt coed with such a laisse re attitude. "You cannot o

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d support. Protecting data gray, managing and allocating tape drives, consolidating console and management and retrieval of SYSLOG in multiple CPU environments are our specialties:



#### **Catching clients** CONTINUED FROM PAGE 95

n and that his quick pace can lead to one and can be difficult to keep up

I ne spark that energizes Skowyra is a commitment to bringing himself and his organization tot of the back office. "The day has got to come when the rest of this corporation will look to information systems for leadership," Skowyra says.

This goal corresponds to a manufacture of the second of t

This goal corresponds to a personal de-ire to be recognized as a corporate exec-tive rather than a "techie."

and, eventually, manager of technical sup-port. I can remember people using the phrase 'techie,' " he says. "I'm not going to spend the rest of my life with a red T we appear the rest of my life with a red  $\overline{T}$  stamped on my forehead. And even though I've moved up the indder to senior vice-president, when you put MIS, IS or EDP there as well, there is still that perception, Those crasp DP guys; they don't know anything."

From marketing to DP
Not harboring a lifelong desire to be an information systems manager, Skowyra
graduated from the University of Massachuests — Amberst in 1967 with a degree in political science. He was then recruised by insurance companies in the
region for a position in marketing.

"I took a computer skills test for Aetas Life & Casusity, and I thought it would be more fun. It also paid more," be says. After a two-year stint as a technical consultant at Aetna, Skowyra moved to Milwaukee, where he worked for four years as a systems programmer and data base administrator for Associated Hospi-

Fourteen years ago, he joired Blue ross/Blue Shield of Missouri sa a sys-ms programmer. Working his way tems programmer. Working his w through the information systems orga zation, Skowyra became manager of tech nical services, assistant director of computer services, special projects director and, finally, vice-president of MIS. "I coded up in management. If you look at management, management is sales,"

at management, management is saies, he says. "You have to sell your ideas and sell your people on your ideas as well as

Relying on his marketing savvy and competitiveness, Skowyra built an inforon systems organization that broke

"We have an account and a product fo-cus — not a functional focus," be says.
"We're not trying to be the slickest pro-ducer of insurance identifications, and we ducer of insurance identifications, and we don't spend much time looking at produc-tivity issues for our end-user departments because that is a dime on the dollar." Most of Blue Cross/Blue Spield's reve-nue is derived from premium dues,

Skowyra says. Ninety percent of that in-come is used to pay claims, and of the 10% that is left over, 8% is used for operating expenses. The remaining 2% is placed in reserve or counted as profit. "If we built computer systems that at-tacked that 7 or 8 cents on the dollar, we'd be crary," he says. "What we ought

to do is build computer systems that can influence that 90 cents." Skowyra sees the role of the tradition-

al information systems executive as that of a scapegoat. "If he doesn't report di-rectly to the CEO, the DP executive will

e after steering co At Blue Cross/B

user executives come in who were used to DP being in the back office, and it is a little ad-

stment for them to sit there hile the EDP executive says he's not are he wants to go along with the plan scause there's no business incentive."

octuse there's no business moentive, ikowyra says.

Occasionally, Skowyra's attitude gets in in trouble. "Bill, in his aggressive-eens, sometimes doesn't cover all his nases," Shupe says. "He leaves some nases untagged in his haste to get-to that

One significant mistake Skowyra has ade in developing a marketing-driven formation services department is to not

ANAGEMENT is sales. You have to sell your ideas and sell your people on your ideas as well as their ideas."

> BELL SKOWYRA BLUE CROSS/BLUE SHIELD OF MISSOURI

explain his aims sufficiently to end users.
"In the last three or four years of transition, we really didn't sell our goals enough," he says. "We did not spend enough time educating the other 1,100 people here shout what we were up to. That put some distance between us and them. Now we're on a public re campaign to address that."

Some users, on the other hand, like Stowyra's expansive approach. "The performance of the information systems operation is one of the things that attract-of me to the company," says Chief Francia (Officer Malke Ristian, who joined Blue Cross/Blue Shield in March. "Two being places where you describe what you want and it was not been asset to be and the delivered. Here, they take it and they finance and how to not it do the finance and how to not it does not seem to the company. one users, on the other hand, like they figure out how to get it done

they figure out how to get it done."
As a manager, Slowyra provides impration and direction for his staff, while expecting results. Teamwork is important to Skowyra, according to Ed Tembolder, vice-president for national delivery systems, who has worked under Skowyra for many year." He prides himster on building an organization that uses the ideas of the indext place has followed be it clearly the builder. He

unes. While some managers, who delegate possibility and walk away from the spect, Skowyra follows the work of his nordinates closely. "One of the things I mire most about him is that, with Bill, see are no excusies," Tenbolder says.



"With a young staff, you "he says. "With the

Bill has a vision for where things as g that puts him at a strategic advabe the part of the

# \$5,000 prize up for grabs in SIM contest

The Society for Information Management (SIM) is accepting submissions for its an-mual juried paper awards competition ning outstanding work by sers in the field of infor-

The award for the winning paper is \$5,000, and as much as \$5,000 is to be split among runners-up. The winning submission will be published in MIS Quarter§5. Other finalists will be considered for publication there as well.

Papers must describe a management information swizers as

ormation system, an approach to ag information systems or a tect

ities. The work that is described in the

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#### Balancing FROM PAGE 95

and management must keep in-formed if the project is going well, if there are problems and if there need to be changes." In setting standards with which to review the perforwhich to review the perforce of program MIS managers are focusing on ogrammers' productivity in oducing functional system ther than on their raw output. According to James Johnson



manager of corporate applica-tions at Marine Midland Bank NA in Buffalo, N.Y., there is one key element to evaluating the performance of those who properformance or tnose was pro-gram the bank's computers.
"The bottom line is the amount of function a system brings to a porticular user," he says.
Performance for program-

Performance tor program-ers cannot be measured in ses of code, Johnson adds. At larine Midland, it is gauged trough a function-point analysis at measures the accomplish-tant pagents. ts of an entire team against res as development time, ors and ultimate function

Johnson agrees with the need to provide a clear outline of the expectations for each employ-

HE BOTTOM line is the amount of function a system brings to a particular user.

> JAMES JOHNSON MARINE MIDLAND BANK NA

ee's job. He emphasizes that the function systems bring to users must be evaluated on an ongoing esis, not simply as an annual Will Creed, vice-president of nformation systems at Electro-

kind of people who share our be-liefs." Creed adds.

cruiting efforts to attract the Tradition takes a backseat at icrosoft Corp. in Redmond, Wash., where employees with shoulder-length hair often star-

measure of a programmer's per-formance than lines of code. The amount of time taken to reach an expressed objective, such as an error-free, usable program, can be a more precise measure of in-dividual productivity, he says. Creed points out, however, that be also puts great stock in ons such as punctuality and adherence to corporate poi cy when reviewing his MIS staff. We've been fortunate in our re-

juggle on the front lawn bety

whit creative sessions But results still take pre dence over process in some reviews there, according to Charles Golder, who directs a group of technical writers that produces documentation for ap-plication software. "The bottom line of all of our effort is still the corporate health," Golder says.
"We're in the business of cre-

ativity for money. quantify and that at Microsoft, too, a functional product is the goal. While be encourages and applauds employees willing to take risks, he must also take into account the times risks turn out to be failures. "Sometimes a dramatic change in documentation may look great to us, but the au ence may look at it different ly," be says.

Seltr is a free-tance writer based in Se-

# Sugaring the pill: Review dos and don'ts

BY KELLY SHEA

you don't have to hate performance reviews. With clear on don't have to hate performance reviews. With clear goals and positive questions, MIS managers can make it through employee appraisals with a minimum of pain. The following review dos and don'ts are offered by Marilyn Mosts Keneedy, managing partner of Career legies, a management consulting firm in Wilmette, Ill.: Strategies, a management of command and the comployee's responsibility to keep track of what he has accomplished. Then he prepared to help the employee assess those achievements. The manager should not

come to the review with a list of all the failures the employee has undergone. In many cases, Kennedy says, "Self-appraisal pro-duces more job growth and satisfaction than feedback from man-Ask pointed questions that require the employee to honestly assess his productivity and how it relates to the department a productivity. The manager should sik the employee what contribution he has made to the productivity of the department and what

plans be has for increasing his productivity and continuing his edu-Be prepared to help the employee answer these questions. If

he does not have a response, make suggestions that may prompt him to come up with some. non to come up was years.

• Don't feel the need to treat a technical star differently, especially if he is negatively affecting the work of others. "A star could ac-

tually be costing you money by being territorial, especially if you start considering the percentage of salaries being wasted because of the star's adverse affect on other employees' productivity," Kennedy points out. "And when you realize that, the star begins to dim."

to time. Put reviews in a positive light. "When management treats reviews as the Day of Judgment, complete with thander, suspense and black closels, [engloyee] productivity tends to become very selective." Kennedy says. A doom-and-gloom attitude is bound to put added pressure on the conductor of the review as well as the

Similarly, don't characterize reviews as the determining factor in whether employees are going to be kept on at a company. "Real performance appraisals should improve people's performance. "Kennedy says," not just allow them to keep their job from review

to review."

\* Don't think that you have to make your employees like you. "As unbelievable as it may usem," Kennedy says. "you don't have to like you." Keep in mind the impression that you want the employee to come away with. "The employee's post-creive thought shouldn't be. Do I like my manager't but 'What the review useful to me or

 Make sure reviewing is an ongoing process. Provide short-term deadlines for the employee in terms of his continuing education and productivity goals, and then assist him in keeping track of his

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Warkstellon. Dallas, Jan. 20-23. — Con-tact: The Conference Deal, Inc., 2701 Far-mount St., Dellas, Tapan 75219 ngton, D.C., Jon. 25-26 — Contact: IDG Con-trance Management Group, P.O. Son 8171, 75 Cochtostic Ruel, Francischer, Man. ory and Space Graphics Hew Ap-focus and Puture Requirements. Caspencii, Ph. Jes. 21. — Centact: Tan-son, Natural Computer Graphics Asso-

Conference on In-ing Productivity in EDP System Represent, Tucco, Arts, Jan 25-25-tz: Applied Computer Research, Ja-les 1230, Phoens, Arts, 504-

DB2/SQL Users Group Meeting. 1 Yalk, Jan. 26 — Cestact: DB2/SQL Users Jens, Box 560, Wall Street Statute, New Y.

TAN DILETER O

egic Planning for New To The Beie of the Planner re Programs, 1221 Avenue of New York, N.Y. 18020.

oct: Michael Krieger, ICCL 85 Continued on page 101

Continued from page 100
Frees on Operations VIII Profile of
the Professional Lis Vigos. Pol. 6.11 — Centact: Interrational Association for Computer Operations Manager, 741 E. Computer Me., 97-100, 100
Operational Association for Computer Operations Manager, 741 E. Computer Me., Orange, Cold. 9886.
Option Storages Interfaces Weeks, San Jim., Colf., Pub.
6-12 — Contact: Technology Forems, Saine 200, 30 TV.
760 AC., Contactors, Mem. SS117.

CAP '25 Conference and Exhibited Workstorion Publishing Sy D.C., Feb. 9-11 — Contact Company etems. Robing or Aded Publish d Conformers on Applied Mohern Los-Processing, Austr., Tens., Feb. 9-12 — Co-natd Maker, Bell Communications Research, Astro-445Sexth St., Morristows, N 2 Mrs.

on '88. Paris, Feb. 16-19 — Contact: IDG Con-Management Group, P.O. Bes 8171, 375 Cock-not, Francischus, Mass. 01701.

# FFB

vs. Sas Jose, Calif., Peb. 21-25 — Contact: S. 1 Dunn, SPS '86 Conference Charman, Suite 1, Vota Way, Vota, Calif. 90084.

Fourth Annual Computer Graphics New York, New York, Feb. 22-34 — Contact: David J. Smill, Edition ton Marketing & Management Co., Suite 1110, 8300

Peb. 23-25 — Costact: Jenne Rogers, Special Progr Society of Manufacturing Engineers, P.O. Box 930, 3MS Drive, Dearborn, Mich. 48121.

ray, Net

### Gibson

#### CONTINUED FROM PAGE 95 the business. Among IBM's moves to re-vitalize account control is an effort to as-

vitains account control is an enort to as-sure that it is the primary maintenance provider in a shop. This is in accord with the belief that he who controls mainte-nance controls the hardware in a shop. IBM's Corporate Service Amend-

ums a Corporate Service Amend-ment discount program and its recent deinstallation and reinstallation price re-ductions show that IBM wants this role. It wants to gain market share in mainte-nance rather than just earn more mainte-

nance rather than just care more unanne-nance dollars. In addition, IBM has acknowledged it is carrying out a pilot program in which it acts as a single point of contact for all data center mantenance, including maintenance done by non-IBM providers. In addition, the creation of IBM's Applications Systems Division is an attempt

HILE one-stop shopping may be good at suburban shopping malls, is it good for the MIS shop?

to offer a single point of contact for appli-cation software needs, whether or not it wrote the software it sells to the custom-er. IBM uses the phrase "one-stop shop-

th the septing. While one-stop shopping may be good at suburben shopping malls, is it good for the MIS shop? On the one hand, it offers convenience and allows a buyer to spend convenience and allows a buyer to spend the suburben and more time on other shops. less time shopping and more time on oth-er things. A buyer can hope to benefit from Volume Procurement Amendment discounts as well. There will no doubt be

discounts as well. There will no doubt be once shops for which such an arrange-ment works best.

On the other hand, stopping at only.

On the other hand, stopping at only.

When the stakes are an high as they are
is computing—beeping costs down and
giving a company a strategic competi-tive edge—hard shopping balabia are like-ly to be not of place.

Besides, MS managers are paid to get the best deal possible for their compa-tions, our state of the state of the compa-tant, our thinks to be such as the state of the com-patible best deal possible for their compa-tions, our thinks to be such as other form.

ny. They are paid to shop around, not just to fill out an order form. IBM's efforts to offer everything under one roof can bring more choice, enged in the price and compare some of IBM's who true, providing the user does price and compare some of IBM's new offerings with others on the market. But users will have to actually buy a fair percentage of non-IBM gent in order to preserve choice and keep all wendors' notices commerties. prices competitive.

According to several customers, re-cent IBM hardware deals have been par ticularly attractive when competition has been involved. This proves the wis-dom of getting competing bids and con-Keeping a variety of vendors are

Reeping a variety of venous around, despite any inconvenience, is an invest-ment in the future. It provides leverage and ensures that when IBM offers a price on competing equipment, it will be a fair price. Some MIS managers know this and do this. This is how they control their ac-

#### LOCAL

# HAPPENINGS

lette, N.C., Jun. 21. ASM, Queen City Chapter ging for the Putsur, with Robert E. Robertson of Uni-y of Seath Carolina. Common Seein House, \$100 E. In dence Bird. 6 p.m. Cantact: Robert Yearwood, Matri

MILLIAN I

Banapolla, Jan. F. ASN, Indian Cr its Base Planning — Enterprise Mod after of Indian University Heistay Inc.

mertine/Aggressing/Passive Community blands of Growth Systems. Revent J Buy Stand. 5 p.m. Contact: John Moor sources Life Insurance Co., 2727 West

nia, Obio, Ann. 13. ASM, Toledo Capter, A eligence, with Richard Ash of AT&T. The Si In: 6:30 p.m. Connect: Dale E. Brego, System Ame S. Mon. S., Freder,

Continued on page 103

# Mortiguert, N.Y., Jan., 12. Date For ment Association (IPRAI), Sulfable Count Area Notworks, with The Computer Size Restaurant, Rr. 25A, 8 p.m. Contact: M Sulfable County DPMA, 257 Depot Road, tion, N.Y., 11744.

terp, Pa., Jan. 13. Association for System ment (ASM), Central Persuphrass Chapter. Loc revolu. with Thomas Slock of Thom, Inc. O'Hern set. 5:20 p.m. Contact: Mark Anderson, 809 Ac-

es, Jan. 15. Society for Management of Profess posting, Degital Equipment Directions in Distrib-eting, Androny's Part 4. 11:65 s.m. Contact: Si-contact Sior, Majne, Jan. 30. Dan Processing Manage-lancation (DPMA), Maine Pine Tree Chapter ship Qualities, with former Gov. Ken Cartis. The Willess, S. s.a.s. Contact: J. Prevener, Data Canni-

SULLIHITASI

# BUT WE CAN SURE BEAT HEM AT TH



**DECEMBER 14, 1987** 

From all of us at Comdisco, bave a warm and merry boliday season.



#### Continued from page 101

mezoe, Mich., Jen. 13. DPMA, South pa Chapter. Monthly meeting. Contact: W n. The Upiolin Co., 7171 Partuge Road, Kal

Perf Wayne, Incl., Jun. 19. ASM, Fort Wayne Cl fer. Critical Section Pactors for US, with Alian Studies Ernst & Waissey, Heliday Inn-Downtows, 300 E. Wash Inn Brd. Counct: Beth Habil, Suite 103, 10427 Lee B

th., Jan. 19. ASM, Oakbrook, O'Hare and aptern. Computer Crime, with U.S. Attorney As-s. Cypress Restaurant, S60 E. Ogden Ave. 8 p.m.

ee, Ohle, Jen. 19. ASM, Megacity Chapter. by meeting. Officers Clab. Weight-Patterson Air Base. 5:30 p.m. Contact: S. Beebe-Ower, Western

embas, Ohio, Jun. 27. ASM, Central Olio Chapter, tra's Hospital's Use of Computers, web Mideoler y of Childen's Hospital, Systems Application Archi-re, with Data O'Conner of BM. Favorett Center for year, 200 Chestings Surer Read. 5 p.m. Castac-rish Maccare, Calmbul Soquiere Rower Co., 215 N.

#### 1/1 51

II Paso, Towns, Dec. 22. DFMA, El Paso Ch

Francisco, Jun. 21. Association for Computing No stry, Golden Gate Chapter. The Changing Rule of So completes, with Bence Gerber. Seven Hills. 252 Califoron. 5:30 p.m. Contact: James M. Spitzs, The Sys Committee Connection, Inc., P.O. Box 2331, Star

Welnet Creek, Cellf., Jan. 20. ASM, East Bay Chap-ter. Monthly disser meeting, Contact: ASM, 32 Robert Start Deads Cold 04569

e Mandon, Coldi., Jun. 23. DPSA, Los Auguin ler. 1969 Installation Disser Dance The Chronick seriet, 2640 Mam St. 8 p.m. Contact: DPSA, P.O.

### (1/10/

e, Jen. 12. ASM, Ottown Valley Chapter, M. Pinancial Systems — Lessons of an Ottown Property Stands of Trade, 185 Sporks St. Contact: Arm

oner, Ont., Jun. 18. ASM. Covenings Conductivity, with Bruce Burgets of Gellmon B. ners. Covenings Inn. 8 p.m. Contact: Rich D. serrial Drive. Rissies Ostavis. Covenin NSR 9

### High-tech work not seen as burnout threat

WILLOW GROVE, Pa. - Burnout is common among business managers and appears to arise more frequently among en than men, according to a recent study conducted by the Adn Management Society (AMS).

But working with computers does not pose a significant threat of burnout. In a list compiled from nurvey responses, the AMS found that of the most common sources of stress, working with computers is last, along with travel and work

In a survey of 344 managers from com-panies of various sizes around the U.S., 57% said burnout is common among managers. Of those reporting burnout, 55%

Just under two-thirds of the managers responding — 65% — said their jobs are more stressful than average.

# China in DP worker pinch

Faces shortage of half-million computer specialists by 2000

HONG KONG — The People's Republic of China may face a shortfall of 500,000 computer specialists by the year 2000, according to a recent newsletter report.

Approximately one million people has tergone some sort of inform

uniergone some sort of information tech-nology training in China, but specialized skills are in short supply, according to Chinese experts quoted in "China Infor-matics," is neweletter published by mar-ket research firm International Data

China will need 720,000 informa technology specialists by 1990, and 1.93 million by the end of the century, according to the report in the newsletter, which was formerly named "EDP China Re-

The shortfall is expected to total be-een 20,000 and 30,000 by 1990, growing to 500,000 by the end of the century.

State Council officials Guo Runghur and Lu Jianzhong reported that while electronic data processing training in Chi-na began in the mid-1960s, most of to-day's users learned their craft during the ntry's sixth five-year plan, which end

ed in 1985. After 1985, China was able to call up some 32,000 people with specialised skills in disciplines such as data and satellite communications. By then, at least 812 organizations had begun to offer informa-

supply.

The two officials said that China has tackled information technology education on four fronts — through correspondence courses, short-term full-time edu The changing nature of technology has

OURCES SAID part of the shortfall could be blamed on the repression of so-called intellectuals during the 1960s. One referred to the

period as a "generation of

lost skills.

ded to China's problem, but a partial so-tion has been found in continuing educa-to through the country's Television University. Television University func-tions similarly to the UK's Open Universi-ty, which offers broadcast lectures and

China's sixth five-year plan provided

100,000 people with some form of infor-mation technology training through Tele-

on 15,000 and 20,000 Chir nology courses lasting fro months at educational inst na during the same period.

na during use same person.

Courses organised by work units were attended by 36,000 people — roughly 1.75% of the working population in China during that period. At Beijing's Capital Iron and Steed Co., 10% of the work force was given information technology training, the report said.

ing, the report said.

Retraining poses the higgest problem for China. A large group of older technicans, many of whom were USSR crained, have skills that are increasingly out of date, and many of them need foreign ian guage training, according to the efficials, Though no contensi was made on the dependations of China's cultural revokle-

tion, other sources said that part of the shortfall could be blamed on the repres-sion of so-called intellectuals during the 1960s. One referred to the period as a

"generation foot skills."
"With the recent shift in politics in Chims, more students are emerging with information technology skills. About 60% of Chim's universities, colleges and voca-tional training achools offer information technology-related studies.

At the jumin-school level, however,

the country is able to do very little. The number of primary schools is so large that equipping them adequately remains im-

# Europe's auditors key into security

AMSTERDAM - Security issues, including the need for coordinated Europe-an actions, stole the limelight at a conference here last month attende d by nearly

ence here ass month attended up meany 500 data processing auditors. John A. Minta, president of the Elec-tronic Data Processing Auditors Associa-tion (EDPA), said one of the main tasks of an EDP auditor is to advise management about problems such as the sec of internal data flow.

The gathering - the Second Eu an Con rence on Computer Audit, Con-EDPAA and the Dutch come

In his closing speech, Louis Bril, Belgium's secretary of state for science poli-cy and public service, called for common data security measures among European

It is important to develop "cr approaches for penal law and for procedural law in order to protect interna data networks, to enable the funct of international instruments of co that evidence gathered in one country is nissible in court in another cou

What is needed is not a mech saction to the requirements of some law, at rather a full appreciation of the role of and need for data protection in an orga-nized working environment," Bril said. Mints, EDP auditor at Liberty National Bank & Trust Co. of Louisville in Ken-tucky, said auditors face a challenge in keeping abreast of technological change.

# P Dataproducts

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O DEC MicroVAX*II O STC* Tape, Disk and Printer Subsystems O PC/Terminal Networks (50 units or more) O Other_	Best Time to Call AM  CONTROL of a series and of land organization.  DECTY Via and Second or recommend (Speed Sequence).  DECTY Via and Second or recommend (Speed Sequence).  DECTY VIA and Second organization.  DECTY VIA and Second organization.	

# **COMPUTER INDUSTRY**

INDUSTRY INSIGHT

### James A. Martin Taiwan first

on the block? wing that the rst steps into

the uncertain waters of the

mencan ones.

At Condex/Pall '87, for exrople, Mitac International rerotedly previewed a PS/2
todel 30 clone. The machine is
apposed to be available early
ext year for less tham \$1,000,
the bar's at 1,995 d on a chip set from Chips Technologies and a BIOS tem from Phoenix Technol

orts strongly suggest that Mul-tech Electronics in Taiwan possibly, its San Jone, Calif. ste, Acer Technology — is aring to introduce a Model ompatible this spring and, aps, a PS/2 Model 50 Micro

nnel clone as well.

Ithough Multitech has aplayed the reports, just Attunced the reports, just about everyone is saying that a Model 50 look-alike is possible it time for Comdex/Spring '88 and that Multitech, or perhaps a surressive offshore another aggressive offshore company, will be the one to in-troduce it.

Ripe for the picking While compatible vendors in the U.S. struggle with cold feet, there's a brand new market ripe for the picking, and many Anian companies are just bra-zen enough to take the chance.

eir first opportunity for the perican market when Chips and Technologies started mak me low-cost Personal Comput er AT chip sets. But the PC AT-compatible market soon became flooded with more "mects than anyone

ould care to count.

This time around, h

### Memorex bids to buy out Telex Company welcomes 'white knight' offer after Edelman's hostile attempts

BY CLINTON WILDER

TULSA, Okla. - Taking the

terminals industry, Memorex In-ternational N.V. last week launched a friendly acquisition bid for hostile takeover target Telex Corp.

Telex, which has been trying for weeks to fend off corporate raider Asher B. Edelman, welcomed the Memorex bid, which is roughly 37 per share higher than Edelman's recently lowered offer. But Edelman intends to continue his effort and said in a strongly worded letter p. Tale

strongly worded letter to Telex

The offer from London-I Memorex amounts to an esti-mated \$911.4 million in cash and stock, compared with Edelman's

en with a higher bid from felman, the fact that Telex rex a good chance to succeed

rd in U.S. shipments of minals with 5% of the me DC). IBM controlled 73% of he market, and Decision Indus-ries Corp., another current hos-

"The whole synergy would be "The whole synergy would be sy good for Telex in that mar-t," IDC senior analyst Eileen Brien said. "The 3270 market Continued on page 107

### Supplier woes hit Micropro Documentation delay

causes late shipments

BY STEPHEN JONES

SAN RAFAEL, Calif. — Delays in product shipments have side-tracked Micropro International Corp.\* Is did not regain some of its lost glory as the former king of word processing software, the company said last week.

Micropro said that shipments of its Workster 2000 Buleses. 3 of its Workster 2000 Buleses.

Officials at R. R. Do d not comment on the late

ness. Page 106.

Tenns Instrum

# The urge to merge 1986 IBM 3270 terminal U.S. market share

# Onset raises ante in bid

BY ALAN ALPER

NEW YORK - Onset Corp., the sell company formed by ven-ire capitalists to acquire Deci-on Industries Corp., last week med its friendly tender offer

# ADR's Bennett heads for greener pastures

BY ALAN ALPER

PRINCETON, N.J. - There onth will cap a 21-year career th Applied Data Research, Inc. pling the putting greens of the world's greatest golf courses. "At my age, it will be a chailenge keeping my handicap at 12," quips the spunky 65-year-old ADR chairman. "In all can-dor, though, I'll probably get it down to 10, but that's based on

who I play with."

While golf will take precedence over most matters, Ben-

ADR, the \$170 million main-frame data base management

er Ameritech company. Al agh Ameritech policy call



py the rest of my life," he

Bennett, who spent 17 years as ADR's chief executive, is de-parting two years after perotist

ng #215 million acquisi by Ameritech. The acquisit which came after a six-month tiod of receding revenue gro and declaring profitability, pwed a 10.

### Western Digital purchases Tandon Winchester drive unit.

CHATSWORTH, Calif. - Tan-CHATSWORTH, Calif. — Tandon Corp., the world's second-largest independent hard disk drive maker, last week an nounced the sale of its Winches-ter disk drive business to West-ern Digital Corp. for between \$40 million and \$45 million in

In addition to the sale price, rwise, Calif.-based Western Agital will absorb about \$35 mil-on in debts associated with the siness, according to James rter, president of Disk/Trend, Mountain View, Calif., re-

earch and consulting firm. Tweive-year-old Tandon will ocus its efforts on the IBM-comtible microcomputer bus at it entered in 1986.

Frails only Miniscribe Fandon trails only Miniscrib Corp. in the independent 20M byte, 31/2-in. hard disk drive busi

ss, according to Porter.
"Western Digital has been king for ways to get into disk wes for a number of years,"

"This certainly gives them s jump start in a very high-growth area. As for Tandon, they will have to make it is at all," he added.

Inc. Chairman Mark Shepl and will pass his title to Presi-dent and Chief Executive Officer Jerry R. Junkins. epherd, 64, will leave TI on

ir has announced his retirement fuctor designer and was named ger of the Se company. Elected chairman in in 1954. He became a vice-presi-

TI Chairman Shepherd steps down esident and chief op-er in 1961. He was nt in 1967, CEO in 1969 and chairman in 1976 He relinquished the roles of

It's one thing to fill a document with data, another to fill it with content that makes someone take action. The document that best persuades not only has a typeset appearance, with visual as well as typographic elements, but also has superior content-facts and figures drawn from all possible sources to make a point of view, a point of sale.

This is what Xerox Document Systems are all about Whether mainframe resident software, networked publishing systems, or stand-alone systems and software, Xerox Document Systems let you, the user, combine information from desktop and beyond to produce documents with superior quality and impact. Take for instance, the Documenter, pictured below.

Consisting of the Xerox 6085 Professional Computer System, the Xerox 4045 Laser CP printer and Xerox ViewPoint software, the Documenter can do an entire job from start to finish-creating, editing, assembling, formatting text and graphics, and printing-in one seamless operation.

But the Documenter is not merely another desktop publishing system. Its networking capability allows it to access information both external and internal. With the Documenter's multitasking power linked to your organization's data base, or

#### Micropro FROM PAGE 105

from Micropro's first quarter sales totals because of the de-trys. The company's first fiscal quarter ended Nov. 30. That leaves Micropro hoping

that it can at least break even on its earnings, which are expected to be released by the end of this

For the same quarter last ear, Micropro reported revepue of \$8.4 million and barely broke even, with earnings of \$26,000, yielding no per-share rnings. Micropro has been slowly

Micropro has been slowly climbing out of the red during the last year, updating old pro-grams to win back its vast in-stalled base while aiming new products at specific vertical mar-

d to recovery -sms conceded that the sh ems could check Micropro's apparent rebound, but he claimed the company is still on

In reality, the delays had othing to do with the basic fial health of the com was a delivery problem, not a fi-nancial one," Williams ex-

Micropro said it has sold as many as 25,000 copies of Word-star 2000 Release 3 since it was inched in late October.

The word processing package is available in two versions, one tailored to the legal community and the other designed for gen-eral-business use.

### **Xerox Document Systems** create proposals that will be tossed around



### **Onset**

FROM PAGE 105

75 cents per share to \$9.50 a share. J. H. Whitney & Co. and elsh, Carson, Anderson & owe, the New York invest-ent firms that are behind On-

ing shares. "One can dr

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n in the event the deal to

# **XEROX**

run in the optional PC emulation mode, or used as your electronic mailbox, you're in touch with vital facts and figures crucial to your success and that of your department. The figures for an illuminating graph can now be summoned from another department's data. A striking example that cinches an argument can now be supplied half a world away. Suddenly what is being said is every bit as good as

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# ...not tossed out.





COMPUTERWORLD

#### Memorex FROM PAGE 105

e would have be on in this b

### VM/CMS USERS

# The new IBM 9750 Business Communications System.



For everybody who wants more flexible computer networks, IBM has an answer: more flexible *telephone* networks. Even better, we've made them a reality.

Introducing the IBM 9750 Business Communications System and its centerpiece, the new IBM 9751 CBX.

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Unlike other telephone switches (or PBXs), the IBM 9751 CBX comes with nearly every line "data-ready." So when you hook up your phones, you get computer connectivity in the bargain.

ought to be networked. You have to decide in advance exactly how every single workstation ought to be networked. You have the flexibility to connect occasional (or unexpected) users, easily and economically. With an IBM 9750 fully installed, you can open your data resources to more people who need them, without spending to equip areas that may never need them.

Even if you use it for voice only, the IBM 9751 CBX will keep you years ahead. It's one of the most expandable systems in the industry, able to serve from 100 to 20,000 lines. So as you

# Any connection between voice and data is purely intentional.



grow, it grows. Yet it's much smaller than its predecessor, the ROLM CBX II, and it's easier on power and air conditioning.

On the other hand, its traffic-carrying capacity is tremendous. The 9751 can be configured so it's virtually impossible to block.

And its 9000AE (for Advanced Engine) processor not only gives you every digital advantage (like ROLM PhoneMail\* and Least Cost Routing), it has reserve power to handle these applications under heavy use and to let you add new applications as you need them.

When ISDN standards are established, the IBM 9751 will be able to work with them. It was built with ISDN in mind, to provide both the power and bandwidth that ISDN usage (for voice,

data and image) will demand.

In fact, the 9750 Business Communications System is a key part of IBM's telecommunications future. Combined with all of IBM's other ways to connect systems, it gives you new freedom to run things your way, to broaden the usefulness of your networks, and to control their expense. To learn more, call your IBM ROLM Systems representative or Authorized ROLM Distributor.

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- Mark Polemons estinghouse Managemen



Mark Potenzone is National Sales Manager for Westinghouse Management Systems Software This group within Westinghouse markets IBM mainframe productivity enhancement software and operating systems software.

westinghouse has taken advanlage of three advertising opportunities that Computerworld offers, much to Mark's — and the company's — safisfaction.

"We've done mostly image advertising in order to create awareness of his group. The name "Westinghouse" is certainly recognizable, but not as a major software supplier, even though we've been in the software business for nearly 20 years.

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works and extended in Compulser works of compulser works SPCIII/SPIT section and Compulser-works's Card Decks. And the results from all three were excellent (Ne Versiers works) would not be seen and the works and the section of the

"The Card Decks did well for us, loo. Those cards are very cost ethcient and we got hot responses. It someone is going to take the time



to till one out, then he or size is interested. The result is a qualified lead.

The combination of these three vehicles give us the best of all worlds. Computerworld and SPOT-LIGHT computerworld and SPOT-LIGHT complement each other. The cards resistance our published acts if couldn't be been't that's why we have working on new add for our near Computerworld. We're helpith or the computer many computers of the computer many computers of the computer many set for years years. We're working for Westinghouse Management Systems Solwure. We can work for your

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# SPOTLIGHT

# ADD-IN BOARDS



The proliferation of board functions for PCs is merely the prelude to an eruption of products for the next generation, which promises to dramatically alter the landscape.

# "...We're trying to reach MIS and data communications professionals. And Computerworld effectively delivers both.

ident/Sales & Marketing Datagram Corporation



Datagram Corporation of East Greenwich, Rhode Island manufactures and markets STEAMER, a data compressor that allows user organizations to cut their number of communications lines by up to 67 percent. And at least one customer was able to eliminate an entire data center and save \$2.5 million a vear

But since true data compressors and their very real benetits - are not that well known by the user community. Datagram needed to increase awareness of this technology and STEAMER in particular. notes Tom McGovern, Vice President/Sales and Marketing for

"Going in, we recognized that we were laced with making a conceptual sale. We knew we'd have to make people aware of the con-



cept of data compression before they'd huy So our goal was to educate potential users and gener ate inquiries

"We chose Computerworld, guite simply, because my many years of expenence with it have shown me what a very effective vehicle if is For example, we're trying to reach MIS and data communications professionals And Computerworld eftectively delivers both. In fact, or the total number of responses generated by Computerworld, 40 percent come from companies that have datacomm managers. Compulerworld is a communication book as well as an MIS book

"The results have been excellent Some advertising we did in Computerworld last December resulled in three new customers and more than \$100,000 in new busi



ness Our 1986 Computerworld advertising budget gave us a terrific return. So much so that we should have spent more. And we will T've been doing business with Computerworld since 1967 — and that will continue. Datagram is

very satisfied with the level of market penetration we get from Computerworld," Computerworld. We're helping more suppliers reach more buyers

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COMPUTERWORLD

INSIDE

IBM revs up 3090s — with a hitch Rotare rules assers



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#### INSIDE



#### Adjusting the Focus

and seat a

place

IBM's introduction of the PS/2 with its VGA standard is forcing manufac-turers of add-in graphics boards to reevaluate strategies. Page S6.

#### Vendor Viewpoint

VGA-compatible graphics boards offer MIS managers the opportunity to keep up with the state of the art while still preserving their investment in existing hardware. Page S6.

#### Desktop Communications

PC facsimile boards com-bine a direct link with the outside world with the means for preserving and organizing message traf-fic. Page S7.

# Product Charts

A selected listing of mem-ory expansion boards for microcomputers. Page \$7.

A detailed guide to accel-erator boards. Page S9.

NIOR EDITOR OCIATE EDITO

ESIGN EDITOR ... RESEARCHER Sally Cusack ASSISTANT RESEARCHER Bonnie MacKeil

Cover illustration: Paul Schulenberg

Some people are staving off the future with add-in boards that make the most of what they already own

# RS GUARD OPTIONS

BY MICHAEL SUILLIVAN-TRAINOR



erospace contractor Sundstrand Aviation is purchasing compatibles for the first time, ending six years of loyalty to compatibles for the first time, ending say years or loyality to - BiM, because the add in boards the company needs are no - BiM, because the add in boards the company needs are no - BiM and the personal compater, we were determined to go BBM all the way, "say jum Wit, office systems analyst for the Rockford, III. - based division of Sundstrand Corp. "But we put the FS/2 on hold because we're not ready for it and the expansion boards aren't there."

applications for the new systems, that may be the wisest choice."

we're not ready for it and the expan The validability of add-it boards has always been an important factor in buying decisions. But the current explosion of new types of boards for existing machines — ranging from Intel Copy. 80368-based occinerates to local-area network connections — in mining them an even more vi-tual part of PC purchases, especially in view of market uncertainty about the fixed of boards prod-ton expected for the fixed of the contraction.

outs expected for the FSP.
Although custom righ on IBM's IPS/I are performing once traditional board functions, users will require souther generation of adds in boards to take full advantage of one to surchitectures of the control aring the latest technology.

Many of the systems that are out don't have

software applications designed to use the func-tionality they provide," says Jocelyn Young, a market analyst for Future Computing, Inc. in Dal-las. "If you can get something to lengthen the lifespan of your existing product until there are

wisest choice."

Micro managers' interest in enhancing old products while moving very slowly toward new cone is reflected in market predictions for added to the cone is reflected in market predictions for added to the control of th

After 1988, board demand will be limited until software applications and intelligent coprocessor boards become available for the new bost archi-tectures. In addition, because many IBM Person-al Computer users will move to the PS/2, the functions provided by traditional intellifaction boards will no longer be needed. Future Comput-ing forecasts a decline in board purchases: Only 7.1 million boards will be brought in 1969; 7.2 million

Son in 1990 ion in 1990.

These trends are evident in the current plans of corporate users. At the Farm Bureau Insurance Group in Lanning, Mich, end users primarily employ traditional word processing and spreadsheat supplications on nearly 200 assorted IBM FCs, PC XTs and ATs. Multifusction boards provide additional memory, ports, clocks and cal endars for the systems, and IBM 3270 termina emulation boards provide access to the

#### Options FROM PREVIOUS PAGE

ny'a host systems The Farm Bureau is limiting add-in board acquisitions to cre-

ate a standard set of easily main tained products, according to data center director Art Kelley This careful board acqu olicy extends to 40 PS/2 Model 30s and two Model 50s that the my recently acquired.

cause the new systems in clude functions previously provided by multifunction boards those boards are no longer nec essary. The insurance group will install only emulation boards on the PS/2s, "We didn't have to reevaluate our board set for the Model 30s," Kelley says, "We view them as enhanced replace ments for the PCs and XTs. They're a little faster, but we don't have any illusions that they will run OS/2

With the expention of a see percentage of power users who will use the Model 50s, the company says it does not foresee an immediate need for OS/2 or the ranced boards that will drive

E. F. Hutton & Co. in New York is taking a similarly conser vative stance on board acquisitions. With 10,000 NCR Corp. 3390 AT-compatible workstations slated for installation in mid-1988, the firm is settling on a standard set of boards to meet application needs. New box relopments are not part of E.

ton's immediate future. "Each time there is new technology, you look at it. But the bottom line is that what we have is working well within the con straints." says Milton Milamed. vice-president of distributed sys

Boards that are a priority in E. F. Hutton's plans are Sta boards from Data General Corn that connect PCs to a network of larger DG 'systems, memory sards used to enhance the capaies of 800 NCR 810 workstations that receive stock market prices via satellite and synchrofrom IBM

Fast boards, slow systems While IBM claims to have thenord more than one million PS/2s, the size of the installed base of its previous generation of PCs and compatibles far exceeds the number of new systems Board suppliers are aiming a host of products at upgrading and ening an estimated 16 million IBM PCs and compatibles, according to Don Williams, senior vice-president of the Enhance ment Products Group at AST Research, Inc. in Irvine, Calif OS/2 is one of the prime fac-

tors driving the need to upgrade existing systems. For exam an XT or compatible system can run OS/2 with the addition of an Intel 80286-hased add-in board and memory enhancementa, Willums says.

Large oumbers of people will run OS/2 on other hardware rms — either new ma chines or upgraded existing machines," says Jonathan Yarmos. a research analyst at the Gartner Group, Inc. in Stamford, Conn. Users can choose from sever. ways to boost current PCs or

XTs to 286-based machines. One method is to add a coprocesard that can access its own 80286 memory but not directly

Unit sales of add-in boards ted number of boards sold separat tersunal computers, 1987 to 1991



INFORMATION PROVIDED BY PUTURS COMPUTED, INC.

access I/O devices on the moth erboard. The system's original slower Intel 8088 processor needs to intervene for all I/O op-

ve and take

While coprocessors increase the speed of the original system, hey also present drawbaci For example, all of the 80286 board's memory must come with the board, thus increasing the cost. High-resolution graphics are also difficult. Full IBM En hanced Graphics Adapter (EGA) or Video Graphics Array (VGA) ulation is hard to obtain at an

acceptable speed. Another alternative is to replace the system's original processor with an acrelerator 80286 board. The replacement processor is attached via a cable to the socket from which the 8088 has been removed. This method gives the 80286 access to the most recent data through a cache memory, and the proces sor can emulate an 8088 to request data over the original bus.

These two methods are used to upgrade an 80286-based AT with an 80386 accelerator. The same problems that trouble the coprocessor approach for the 80286 hold true for that ap ornach with the 80386. But use of a coprocessor avoids the ne cessity of removing the original

AT 80286 processor. Some vendors offer alte tives to these approaches. For example, AOX, Inc. in Waltham, Mass., provides a bus master approach to accelerator boards that resembles the concept behind the new bus architectures such as the PS/2's Micro Chap nel. AOX's approach allows addin boards to temporarily take control of the bus by combining a cache design with a coproces Frequently, accelerators are also used for specialized applica-

Sanders Associates Inc. a Numbers N. H. broad military defense contractor, uses Al Archi tects, Inc.'s Hummingboard (an 80386 accelerator) to design the teractive video-based train systems. Sanders accomplishes ent work on PC XTs and ATs or compatibles

running Microsoft's MS-DOS. In addition to accelerators, the company uses digiting ing boards to encode hoe art and disk con troller boards for added storage capability

Sanders is unlike to have the newest PC vatens, says Raipl Baer, an Engineering Fellow at Sanders, be of old PCs and boards works well

We have all sorta of things clicking to gether. Why on earth would we want to change to a brandnew system?" Baer asks. can always do things faster and more efficiently, but you can't change every other year Effectively using 80386 ac

celerators with current DOS programs requires software extensions that allow 32-bit processing, says Tom Spaule resident of Al Architects in ambridge Mass "The same program that runs in 16 bits on a 386 ts 2½ times faster in 32 bits," he says. Users are installing the com-

y's Hummingboard with DOS extensions for come aided design (CAD) and artificial ce applications. some CAD applications that rur on Digital Equipment Corp. VAX minicomputers and Sun Micro systems, Inc. workstations or now run on a boosted PC eaulding claims

Focing trade-offs Nevertheless, users ru more mundane applications are faced with trade-offs when con-

ring accelerators. Purchasing an accelerator board for cus rently installed PCs, XTa, ATs or compatibles can save the cos of acquiring an 80286 or 80386 system. But economics is not th only factor involved in such deci-Wah accelerators

choice involves economics, the hassle factor and politics," says Julian Horwich, executive director of the Chicago Association for Microcomputing Professionals (CAMP).

Politically, buying an acceler ator is often an expedient way to avoid a conflict with management. New software applicate may become available within a year of purchasing a new system. But the applications can run at optimum efficiency only on a more advanced machine with a faster processor - and manag ers tend to be reluctant to autho rize brand-new system purchases within such a short time

ntial for conflict

board of any kind to an installed complex of bardware and software applications may cause other problems. "The biggest has sle with any of the boards is that you can get into a conflict with another board or device," Hor wich says.

For example, Horwich say when he recently installed a memory board in one of his cor pany's systems, a conflict oc curred between the new bo and a previously installed LAN The LAN board refused to

vendors and find out how to tell the software for the expanded memory board to access son place else in memory to avoid conflict with the LAN," he says. Theoretically, such conflicts can be avoided if all the boards are obtained from a single ven dor that guarantees that all the

Residence pattern

products work together. But this

scenario is rarely possible be-

cause no single vendor supplies

Usually, one vendor supplies ac-

celerator and memory boards

while another offers communica-

charged with acquiring PC crm-

ponents tend to stick with a few

endors - ones whose products

they have worked with through

the years - to avoid potential

machine and one set of suppo-

dor," Horwich says.

boards from different ven

products all from the same ven

there is more than one kind of

personal computer out there

There are four or five types of

each system and 10 types of soft-

"Once, you used to buy one

As a result, may

all the boards that users req

tions products.

frame. Luckily, applications can he run with the belo of a less expensive accelerator board

long as users are willing to mal due with old machines ket edge, like the time we move from the PC to the AT," say Martin Alpert, president of Co mains Curp., a Cleveland-base The trouble is that adding a new PS/2 board vendor. "Wheney there is a market edge, transie opportunities occur. One

those opportunities is alterna processor boards. But as the price of 386-based machin comes down, the market w move from alternate processo in current machines to new m

One of the major challenges

the personal computer is accor

plishing all the integration."

volving to new stands

in upgrading their current sy

tems is expected to last only

'We are presently on a ma

t in accelerators as

Alpert pegs the life cycle ient opportunity" fo alternate processor boards at year and a half Traditional multifunction, b sic graphics emulation and acco work. We had to call one of the erator boards are expected

> become less nonular as users i stall more PS/2s and machin with PS/2-like functions Memory and comp products, however, will be much in demand for the new sy

s as they are for the old. Currently, the average per sonal computer boas a memory of betwee 640K and 1M byt

number of projected add-in b according to the Gartner Group's Ya mos. OS/2 will requir 3M bytes or more, h Local-are networking, already significant part of u ers' board require ments, will also n ceive a major book from the next genera tion of PCs. 89 90 91 92 'I would neve

proclaim any yer 'The Year of th LAN,' but we will i of the state of her blist order nally see some in crease in LAN sof actionality," Yarmo "OS/2's communication ability will - if not bring abou more boards - certainly caus

people to buy the ones out ther Board requirements ar changing because of new bus as chitectures and the software t drive them. Whereas once ther were two primary bus archites tures offered by the leading m crocomputer vendors — IB) and Apple Computer, Inc. — to

day, there are five and possible ore on the wa Although IBM stopped mak ing PCs and XTs - and the day the AT are numbered -IBM's original bus continues to thrive on machines made by yen

dors of compatibles. The Apple Macintosh did on offer an open architecture fo board vendors' products unti-

Sż

this year's introduction of the

'The Mac SE and Mac II are really open systems now, and there is an opportunity for board vendors that didn't [previously] exist," Yarmos says. "With an increased acceptance of Apple in corporations, this is a viable add-

in market."

Macintosh boards that allow links with other personal com-puters, host connections, added memory and enhanced displays memory and enhanced displays are all becoming available to Mac

However, some vendors are reluctant to enter the Macintosh

market because of the trade-offs "It is a rapidly growing mar-ket, and there are few barriers," says Robert Brown, president of Quadram in Norcross, Gs. "But other segmentation of the business, and Apple's poli-

cy is that they are going to own the popular enhancements and peripherals for their products. You have to be careful which products you choose, or you might get stepped on by Apple."

Alternatives available
Despite IBM's traditional domination of the corporate maother vendors are joining Apple in offering alternative architectures on new personal comput-

This year, compatible maker Compaq Computer Corp. intro-duced the Deskpro 386/20 with a 32-bit memory bus based on the firm's Flexible Advanced Systems (Flex) architecture.

The system separates the memory and peripheral bus-es, allowing 32-bit access to memory. It also includes a cache emory system. AST Research

also announced a so-phisticated bus this third-party suppliers will respond." year. This action represents part of its first move away from exclusively

selling boards to of-fering personal computers as well. The Smartslot architecture is available on the vendor's Premium/386 system. Like Compag's Flex, AST's bus provide separate memory and peripheral access. Smartslot also includes "arbitration circuit" that facilitates the use of intelligent co-

processors Both the Compaq and AST ar-chitectures claim AT compatibility, distinguishing them from IBM's Micro Channel architecture, which does not allow compntibility between the PS/2 and AT.

Users not ready to buy into IBM's PS/2 strategy because of compatibility issues welcome the alternatives provided by other vendors. For example, Sundstrand recently bought about 40 "We're buying the ASTa rather than PS/2s because of the availability of the boards and the trand's Will

says. For their current systems with PS/2s, the Micro Channel architecture means less boards in the short term and, in the long term,

Travelers Insurance Co. in Hartford, Conn., is switching to a rsonal computer standard sed on the PS/2 Model 60. The company acquired about

500 systems this year to replace its PC ATs. "Every AT had an EGA board and a memory board with 128K bytes installed. That made them EGA-capable 640K-byte sm-chines," says Lee Nolan, project manager at Travelers. "Those functions are both taken care of on the PS/2. You have 1M byte

of memory and a VGA all built in That certainly decreased our board business.

Because of plans to run OS/2

Extended Edition when it becomes available, Travelers is acquiring 2M-byte memory boards
for many of its PS/2s and remain-

ing ATs. For communications, the company uses Digital Com-munications Associates, Inc.'s Irma 3270 micro-to-mainframe and IBM Token-Ring LAN In going with the PS/2, Travelers says it was more inter

in the system's potential than it was concerned about incompati-Switching from the AT to the

PS/2 provides users with a high-er processor speed, a larger hard

disk and higher throughput po-tential, Nolan says.

"The machine setup is esnier

om the hardware viewpoint,

because there are no switches to

set or jumpers to change. There are much better graphics, a bet-ter monitor and higher resolu-

want?" be asks.

What more could you

Nolan says the transition to

the PS/2 is a lot less traum

than is often portrayed. "There

was a fair amount of change from the PC's 8-bit bus to the AT's

16-bit bus," he says, "but every-body just kind of ignored it."

At that time, suppliers of I/O

boards did not change their prod-ucts to accommodate the new

bus, but the memory board mak-

ers had to switch from 8 to 16

bits because the PC boards were

hear anyone screaming then?" Nolan asks. "This change only ears to be different be forces you to go back and redo the shility to take advantage of

orms for the next on

"Everyone had to redesign their memory adapters. Did you

them. For this reason, board de

While multiple processors working concurrently may pave the way for more sophisticated applications, the boards will not be popular with users until there are software drivers to go with

Shrinkage in board peripherals segment U.S. unit sales are projected to de sales between 1987 and 1992 cline as a percent of all perit

92 million units

PROBLEMON PROVIDED BY PUTURE COMPUTENC, INC.

add-in boards.
"The new Mac II bus and the Micro Channel are both multimaster buses. You can plug in iple pro ers, and any snor can take control of the Al Architects' Specialine

On AT-type systems, CPU is the only master of the bus, and other bounds are not al-

lowed to take con-trol. This means that HE MICRO Channel has more roughput is owed to the speed value because of the new genres of boards. It is a nicer platform the AT.
"We can put up to four Humming-boards into an AT, to develop on than the classic bus, and but because of the limited bandwidth. IULIAN HORWICH

the throughput is quite slow. You can't CHICAGO ASSOCIATION FOR really do parallel processing in which you share tasks oceasors," Spaulding MICROCOMPUTING PROFESSIONALS ong process

Multiprocessor boards with Multiprocessor boards with bus master capability should be available by the end of 1988 or '89, Spaulding predicts. Board suppliers are now working on multiprocessors to

enhance networking, graphics and multiuser applications. One function is to increase system throughput by transferring con-trol between the PS/2 CPU and add-in boards armed with their own specialised processors.

"On a given processor, you could have a certain number of workstations attached in a localarea network," says Jim McClellast, IBM's manager of strategic and systems planning for the Personal System line. "After you get past a certain number of s, the throu

sopers are working with soft-are vendors to develop applica-The software implications of

more users. With the Micro Channel and bus master boards, the throughput is improved to

the throughput is improved to the degree that users get better

ose and more wor

and socroware impacations of concurrent processors are a lit-tie troubling," says Ken Bosom-worth, president of International Resource Development, Inc., a Norwalk, Conn., market re-search firm. "While the hard-ware folks can see how to build much things, acting softens has such things, getting software to take advantage of them is quite icult. You end up with a coprocessor and the memory and the main processor needing to continually wait on each other."

Users are equally unim ications of multiprocessors at, in the long run, they see pro Today, the PS/2 is a prob-

lem because of the new types of boards you have to buy." CAMP's Horwich says. "In the long term, the Micro Channel has more value because of the new genres of boards — I/O pro essors, better graphics proces ers. It is a much nicer platforn to develop on than the classic bus, and the third-party sup ers will respond.

Scholarly coution At Loyola University of Chicago, users work with a variety of per-sonal computers, including IBM PCs, XTs, ATs and compatible and a few 386-based machines. Each year, the university dou bles its microcomputer popula-tion; it jumped from about 600 or 700 last year to 1,300 this year. As the school adds new types of arstems, more sophisticated

ourds are required.
"Most of the boards for the apatibles are now performing ctivity functions, whereas in the past, boards were used to beef up the workstation itself,

ter analyst at Loyola. spite user interest in nev personal computers, such as the PS/2, Loyola's information systems department is taking a cau-tious approach to acquiring the new systems until applications

are developed.

"My hope is that the design of the bus to allow cooperative processing will open up all sorts of new things we haven't even dreamed of yet," Wee says.

Even at Sundstrand, where AST competibles are being in-stalled as an interim solution, us-ers hope that new developments will make the architectures more attractive. more attractive.
"If beared; come out to do some of the things that take time now — like acroes updates and high-resolution graphes — we'll be immediately interesticy interests on the cars asy they need three processors on one machine to run a certain function, we'll reevaluate our AST standard."

Where's the support? In the meantime, Wilt and ot

managers are concerned about more basic problems. "No mat ter which third-party manufac turer it is, if you call them with a support problem that requiremore than basic information they won't be able to help you

be says.

The standard response from vendor support personnel is to tell users to check whether the board is installed properly, Wilt adds. For more sophisticated usadds. For more sophisticated us ers, the issue is usually a prob-lem of conflict rather than some

ing simple.
"I find it very discoura having to train the support per-son when I'm calling for help."

Wife says.

In many cases, vendors are responding to such complaints with stepped-up programs.

"Vendors are ramping up on service and support because they realise how important it in to maintain existing customer loyalty and to make sales to more sophisticated users," Fature Communique's Young says. omputing's Young says.
"Business declined sub

tially after the April 2 announce ment [of the PS/2]," says Danie ment for the Fo/2), says times Klein, in Atlanta-based distribu-tor of add-in boards to Fortune 500 companies. "Corporate us-ers needed time to digest what IBM mitroduced, and most peo-ple put a freeze on buying new ems until they evaluated the

Now, users are coming to the end of their evaluations, and board makers are gearing their development toward the future.
"I'm hoping I'll be pleasant! surprised by what develops, Loyols's Wee says. "Right now

though, I'm not expecting any-thing to knock my socks off in the ng year." o

# Presenting a mainf

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# Shift seen for graphics boards

BY SUSAN MESSENHEIMER

The market for add-in graphics boards has exploded in the last several years, fueling the coffers

100 mm But now the Personal System/2 offers integral graphics the Video Graphics Array (VGA) standard — which offers a basic 16 colors at 640- by 480-p resolution and an optional 256 colors at a 320- by 200-pixel res-

VGA has altered the outlook for the graphics board industry. num, VGA portends a gradual erosion of the market and the certainty of a shakeout

#### rd makers' blues

hics-rich PS/2 could not have come at a worse time for many U.S. board manufacturers Profit margins, already squeezed by pressures on the volume marketing channels, were further compressed by price competition from factories

"Margins on Enhanced Graphics Adapter products have croded to the point that it is no nger viable to produce them, laments Jim Harris, president of board maker Hercules Comput-er Technology in Berkeley, Calif. er Technology in Berkeley, Calif.

Now the PS/2 has given ven-dors additional headaches by drastically reducing the board surface area on which chips can be placed — to roughly 30% less than what was available on us," Burkman says.
Of course, the advent of the PS/2 will not entirely eradicate the market for graphics such products see op-

octunity among PS/2 ternatives, such as Apple Computer, Inc.'s Macintosh II and the Some 14 million PC, XT and AT clones are

now installed, indicating a substantial poten tial base for sales of graphics board enchanges in marketing strategy will need to be

IBM Personal Computer AT running Control Automation's Model Male, en-hanced with Orchid's Turbo PGA graph-A good deal of product differentiation in the low-end segment of graphics add-in board market has been based on orice. These boards were massproduced for a horizontal mar-ketplace and sold via dealers, distributors and retail outlets.

The OEM factor Now, many graphics board makers are seeking to improve ma gins through arrangements with value-added resellers and

What OEMs look for, however, are solutions for specific ver-tical niches — solutions that



IBM's Personal Computer XT; 50% less than on the PC AT. What that does, explains Bill Burkman, director of marketing for Orchid Technology Co. in Fremont, Calif., is force a choice between restricting the number of features per slot or intensify. "IBM hase't made it easy on

graphical performance or on-screen information capabilities." imer is an indepe suitant and writer based in Natick. inng in advanced tech-nest and implementation.

You either play a dollars

game or you move to the high end to survive," agrees Mike

come from adding value, not just

require research and develop-ment, Harris says. "We will do it

by coming up with innovative technology that will enhance the

capability of the developers' software, either in terms of

wer, to application software. Tapping the OEM market will

# VENDOR VIEWPOINT Graphics upgrades: A wise investment

As is always the case when IBM makes a major product

BY PAUL JAIN

host of computing standards were created when the Personal System/2 debuted last April. In keeping with tradition. Video Graphics Array (VGA) becan the de facto graphics standard when IBM incorporated it into the motherboard of its PS/2 Models 50, 60 and 80 Just because IBM has decided

that VGA is important does not mean that MIS professionals will Caster wheel model, created on an automatically run out and up-grade their installed personal computer base to the graphics equivalent of PS/2. There are, however, at least

Clotiaux, special projects direc-tor for Houston-based high-end three compelling reasons for MIS to consider that upgrade or, board maker Omnicomp Graphat the very least, mull over as ics Corp. Clotiaux defines "hig uperade to an Enh end" as areas such as graphics ics Adapter (EGA). These include increased employee pro-ductivity through the use of a graphics interface, preparedness ging, process control, medical diagnostics, computer-aided design, simulation and modeling, or future releases of powerfu computer-aided software eng application software packages neering and computer-integratand insurance for the investment of installed PCs and PC-based Vendors now operating in the application software

mid-range and high end of the One reason the Apple Com-puter, Inc. Macintosh penetratgraphics board market will have ed the Fortune 500 is the co to cope not only with a flood of puter's easy-to-use graphics interface. With a mouse, users interact with the computer, se-lecting the commands they want ties attempting upward diversikind of competition from IBM. They will vie not with VGA but by moving the pointer to the command and clicking the with the IBM 8514 display, mouse. This is certainly easier which boasts a pixel resolution of than entering programming codes to execute the same com-The market for boards with

nd on a DOS-based PC. With the help of a graphics interface, employees no longer have to think about "using" the nputer and can focus their attention on the task at hand. productivity.

Even word processing be comes easier when the user can see italics as italics on the screen instead of odd coding before and after the word

# Making it easier IBM resized that its computers were difficult to use. So when in-troducing the PS/2 line, IBM an-

moed it would take advantage All sectors of the graphics of OS/2 and Presentation Man oard market show room for ager in an attempt to make its rowth, at least through early 1989, Malik says. But vendors

ficer of Video Seven, Inc., a graph

Presentation Manag IBM'a version of Micros Corp. a Windows, makes an IE computer operate much like Macintosh, However, to run ti software, and take full advanta of the machine's multitasking ities, the computer needs be equipped with at least an EC card, Since IBM introd uced E three years ago, third part have had time to improve on In resconse to these enhance ments, IBM increased the relution and performance of EC to bring it to the level esta lished by third parties. The co ced EGA w S/2 as VGA. The PS/2 a nouncement made 640- by 48 pixel resolution a new atanda for PC graphics.

Applying applications
Most of the software applications that will appear on the markets. ket in the next two years will ritten for use with VGA. So ware developers are alrea busy writing programs to ta advantage of the advanced cap bilities of the PS/2, including t

dany of the new program will not run on the old mon chrome displays or even on Co or Graphics Adapters (CG/ For application programs, i cluding advanced versions popular spreadsheet, data be and word processing program VGA is a must

In addition to prot ting ti installed base of more than ! ion PCs now in use, it is all necessary to consider the inves ment in software designed f previous graphics standard VGA boards that feature bac wards compatibility allow use to run the new high-power software applications specifical designed for VGA, while alrunning all software application designed for EGA, CGA, Mon

chrome Display Adapter and the Hercules Computer Technology ogy, Inc. Graphics Card.
The most obvious different

between the PS/2 and IBM Pe sonal Computer ATa and XTs what appears on the monito The PS/2's graphics equal, exceed, those of the Macintosh However, it will take mor than good looks to convince Mi

professionals to spend money for a trade-up. A hard look at who graphics can mean to a compar vince th most skentical MIS profession that upgrading PC graphics is a investment that makes sense. es sense. •

uter-aided manufactu

new competition from comp

fication but also with a dif

1.024 by 768 on the PS/2.

1,024- by 768-pixel resolution

will erode, some analysts say,

ruse of IBM's 8514 entry

says,"IBM has done what I call

leading from the rear' by offer.

ing significant quality and capa-hility. This forces vendors to en-

hance their products before there is an installed have."

in price, we will be playing both a

resolution game and a perfor-

mance game, says Steven Levy,

turer in Winooski, Vt

ess development manager at Vermont Microsystems, Inc.,

"As the monitors come down

Sohail Malik, an analyst at Daaquest, Inc. in San Jose, Calif.

# PC facsimiles are offering direct document input

Facsimile, or telecopy systems, better known as fax, have been in widespread use for more than 70 years. By some estimates, as many as four milion fax machines are already scattered throughout

the world - two million in the U.S. alone. Personal Technology Research, Inc. in ston estimates that close to one million fax machines will be sold in 1992, the majority of which are the subminute CCITT Group III systems. The adoption of a worldwide standard, coupled with subminute speed, has been a principal force in the recent growth of facsimile systems.

The latest fax technology twist is an add-in board that fits personal computers. PC fax boards, which fall into CCITT Groups II and III, enable documents to be sent and received as easily as they would on a stand-alone machine. According to International Data Corp. in Framingham, Mass., while just less than 17,000 PC fax boards will be shipped this year, that fig-ure will grow to 187,000 by 1991.

Some 16 vendors currently ma ture a variety of PC fax products. But the market is still young and growing: An esti-mated 15 PC fax boards were introduced at Comdex/Fall '87 in November. Two of the leading-edge products in this category are Gammafax from Gam-

malink Co. in Palo Alto, Calif., and Ez-Fax Inc. in Boca Raton, Fla.

#### The simplicity test The real test of a product is its simplicity

- whether it can be taken out of the box and used without difficulty. Both Gamma fax and Ex-Fax, which consist of a board, Cross is vice-president of Cross Information Co. in

Boulder, Colo., and the author of several books on

software and relatively straightforward manuals, are easy to set up.
In both cases, the user simply install the board in an available slot. Minutes af-ter software installation, the boards are

Both PC fax boards incorporate a tele se Y-jack to bridge the PC fax board and the telephone set. If you have one of the latest generation telephone key or private branch exchange sets, however, this jack probably will not work, and a sep-

arate line may have to be installed.

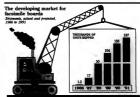
Each product's software offers key- or menu-driven functions — allowing you to send or receive, convert from ASCII to fax, print, display or scan (with an optional scanner) — and many other features.

Gammafax software incorporates one quite useful feature. It automatically changes the AUTOEXEC.BAT file, which configures the PC to access peripherals. E2-Fax provides a more concise on-screen presentation; however some of its features are not as accessible as those of immafax, which uses F1 keys, making features accessible with a keystroke. PC fax boards, relatively new to the arketplace, are still somewhat unstable.

Gammafax and Ea-Fax are no exceptions. ging trial runs, both locked up the system, necessitating a warm reboot.

The benefit most often mentioned by PC fax board users is savings in time. Both Gammafax and Ez-Fax certainly serve that end, but they also offer an exter

array of features that advance productivity and convenience. For example, both offer a wide selection of diagnostic and er-ror-correction features. Furthermore both boards interface to some of the available "paint" software for



processing packages. This allows facaimi-le documents to be integrated with word processing and then printed or filed for fax, electronic publishing, PC communi-cations and other desktop applications.

Ford or Chevy Both Gammafax and Ea-Fax allow users to get started quickly, transmit facsimile in the background while still working in the foreground and access the document once it is in the PC. The differences between the two are similar to the distinctween the two are similar to the distinc-tions between a Ford and a Chevy — more matters of individual preference than of functionality.

The Gammafax system provides a fea-

The Gammafax system provides a fea-ture that enables the document to rotate 180 degrees in case it was faxed upside down. Another nice feature in both sys-tems is their ability to electronically magnify documents. This feature can be par-ticularly helpful when resolution is poor or a faxed document is illegible.

En-Fax's structured menus, on the other hand, make it easier to use. It has an encryption feature, using the National Bureau of Standards Data Encryption

Standard. For modern dichards, it also has a built-in Hayes Microcomputer Prod-ucts, Inc. 300 bit/sec. to 1,200 bit/sec.

The greatest benefits of these or any other fax boards are apparent when they are connected to other equipment. When an external scanner is used or a PC-based board is set up to accept dial-in communi cations from another fax machine, all co respondence can be put into the PC. Then, if a filing program or DOS directory exists, the PC can function as an electron-

Separate on- and off-line paper filing systems are not necessary. Everything can be put into the PC, copies can be made available both on-screen and by printout

and documents can be archived for main tenance and accountability. One of the most exciting prospects for PC fax boards involves their use in LAN gurations. A fax board can be in-

stalled on a file server and shared among While PC fax boards may not replace

fax machines, they will certainly move the facsimile out of the warehouse or mailm and into the front office. • m/XT, Bocarum/AT d memory board for IBM PC, XT, AT

nd memory poor sor some to 12 MHs.
spatibles operating at up to 12 MHs.
m/AT offers AT, XT/286 and true 16-

# Memory expansion boards

Action instruments, inc.
(619) 279-5726
AICP-MEM404
A 20M-byte hard-card fixed disk for IBM Personal Computer XT, AT and compatibles.

AICP-MEM502 A 512K-byte random-access memory exp son card for AT and compatibles. AICP-384COM

A 384K-byte RAM expansion board for XT and commercibles.

Advanced Logic Syst (408) 747-1988 Add-RAM, Add-RAM GS, 80/256.

80/64 Series includes 16K- or 48K- to 64K-byte nory upgrade, respectively, for the Appli nputer, Inc. Apple II and II Plus; and 256K

nary, S Memory expansion er, XT, AT and co ds 128K byt s of 512K b

es of two of

i Motherboard Upgrades for pag Portable, Zenith machines, Personal Computer an upgrade consists of plag-in decod Upgrade for Zenith 150, 151, 161 em

Continued from prevous page

Cumulus Corp. (216) 247-2236 CU-RAM emory for IBM Personal System/2 supports Lotus/Intel/Micro-soft Expanded Memory Specifica-tion (EMS) 3.2, EMS 4.0 and Enhanced EMS protocols.

Digiboard, Inc. (612) 922-8055 Digiboard RAM/3M byte For IBM Personal Computer AT and compatibles providing up to 3M bytes error-checked RAM.

Dove Computer Corp 1919: 763-7918 Mac Snap Mac Snap Memory upgrades for Apple Com-puter, Inc. Macintosh. Various mod-els add 2M bytes RAM to Mac els add 2M bytes RAM to Mac

els add 2M bytes rount or our 512K, 4M bytes to Mac Plus and SE 8M bytes to Mac II. Ehman Engineering, Inc. (800) 257-1666 Ehman Macintosh Upgrade Adds 256K chaps to an Apple Com-puter, Inc. 128K-byte board to make it a 512K-byte board. Upgra dable to 1M or 2M bytes.

bytes RAM, respectively, to IBM PC, XT, AT or compatibles. Electro Design, Inc. (619) 471-0680 Memcard PC Compatible 64K-256K Memory Single-function memory board for IBM Personal Computer XT and IMP Professional, Available in 64Kents to 256K bytes

Everex Systems, Inc. (800) 821-0806 (800) 821-0807 (Calif.) Multifunction EMS Rum on IBM Personal Computer, XT, AT and compatibles, Total IM-

RAM 2000, RAM 3000 Del and compatibles. Total Runs on AT and compatibles. Lora 2M or 3M bytes of memory expan RAM II 2000, RAM II 4000 Runs on IBM Personal System/2 Models 50 and 60. Adds 2M bytes

or 2M to 4M bytes memory, respec-Maxi Magic EMS Runson IBM PC, PC XT and compa ies. Adds 2M bytes of memory

Fortron Corp. (408) 432-1191 tron 2M-byte, 4M-byte RAM Cards
A 2M- or 4M-byte expansion box Corp. and Intel-compatible

(Contact local IBM sales office)
IBM 2M-byte Expar
Memory Adapter
Provides 2M-byte exp.

social System/2 Model 30 IBM PS/2 80286 Expan Memory Adapter/A
A 2M-byte memory adapter for the

PS/2 Models 50 and 60

IBM Enhanced Memory Expansion Adapter Provides expanded memory for soft-ware that adheres to Lotus/finel/ Microsoft Expanded Memory Speci-fication 3.2. Can be installed in an AT ~ De XT 1946. AT or PC XT/286.

Idenssociates, Inc. (617) 663-6878 Idea Supermax/MC Adds up to 12M bytes extended memory to IBM Personal System/2 Models 50, 60 and 80 in one slot.

Idea Supermax 30 Adds up to 8M bytes Exp Memory Sourification to IBM Bural Computer, XT and PS/2 Mod Idea Supermax/EMS Expands IBM PC, PC XT, AT and

compatibles from 512K- to 16M-Idenmax/30, Idenmax/MC Same as Iden Supermax 30 and Su permax/MC but without ports. nax 384. Idea Minimax Adds 64K to 384K or up to 512K

Image Technology, Inc. (303) 799-6433 Short RAM Card II Contains 256K to 512K bytes dynamic RAM for IBM Personal Com-

Intel Corp. (800) 538-3373 Above Board 2 for IBM PS/2 Provides Lotus/Intel/Microsoft Ex-panded Memory Specification and ISM ACM Amended Memory Specification IBM OS/2 expanded memory to 2M bytes for IBM Personal System/2

odels \$0 and 60 sove Board 286, Above and PC ory expension board for IBM Personal Computer AT and compu-tibles (PC, XT and compatibles for Above Board PC) running up to 12.5 MHz and the IBM PC, XT, PS/2 Model 30 and compatibles ru up to 8 MHz.

Levco Corp. (619) 457-2011 One Plus One, Monster Mac A 2M-byte expansion board for the Apple Computer, Inc. Macintosh Plus and 1M- to 2M-byte expansion board for the Mac 128K or 512K.

Mac Doctor Electronics, Inc. (415) 964-2131 Brainstorm Series Brainstorm adds memory from 1M

brantstorm acids memory from 1M to 4M bytes to the Apple Computer, Inc. Macintosh 128K, 512K or 512E, Brainstorm XE adds 2M, 4M or 8M bytes memory to the Mac Plus, SE or II. Brainstorm II adds 1M byte memory to Mac II.

Mac Memory, Inc. 1800: 862-2636 Macplus Mega Adds 2M bytes of memory to Apple

Computer Inc Maretash Plan Multi-SIMMS Memory expansion for the Ma Plus, SE or II in sets of 2M bytes.

Mac Peak Systems, Inc. (512) 327-3211 Plus-RAM Adds 2M bytes memory to Apple Computer, Inc. Macmosh Plus, SE

Mac Products USA, Inc. (512) 832-0335 28K to 4M byte Upgrade

Upgrade offered in two configura-tions: Incremental expansions in rlude 128K to 4M bytes for Apple Computer, Inc. Macintosh 128K and 512K to 4M bytes for Mac 512K, 512E, Plus and SE. Upgrades in-clude 2.5M byte or 4M bytes for Mac SE. II or Plus and SM byte or 8M bates for Mar II

MDideas, Inc. (415) 573-0580 Octoram, Octoram ESP RAM cards for Apple Computer, Inc. Apple IIGS, Former offers 8M-byte RAM extension, Latter offers 512K-byte static RAM exponsion

Megahertz Corp (801) 485-8857 Ala Card/2 Memory upgrade for IBM Personal System/2 Models 50 and 60. In-cludes 2M bytes of Lotus/Intel/Microsoft Expanded Mer cation

Microtek, Inc. (619) 569-0900 GL 640 Plus Provides up to 2M bytes page RAM for IBM Personal Compute AT. AT&T PC 6300 and most com

GL 1460 A 2M-byte expanded memory board for XT, AT and compatibles. GL 1425, GL 1430, GL 1440 A 2.5M-, 3M- or 4M-byte extend memory board, respectively, for AT and compatibles.

Up to 576K of conventional RAM. Fills PC, PC XT and compatibles to The BAM-16MM Provides I GK bytes additional RAM for Apple Computer, Inc. Apple II with 48 hours RAM

Microvoice Communications (916) 722-5158

Arctic Mac A 2M- to 8M-byte memory upgrade on the Apple Computer, Inc. Macin-

Microway, Inc. (617) 746-7341

Megapage Memory expansion board for the IBM Personal Computer, XT and

Monolithic Systems Corp. (303) 790-7400 Just RAM/AT, Just RAM/ATZ Memory board for IBM Pers Computer AT and computables, Just RAM/ATZ uses socketed, 1M-byte

Just RAM/ATX Provides up to 16M bytes of memo-ry plus the option of adding 128K bytes of conventional memory for

National Semicor (408) 721-8093 A 16M-bate exp Apple Computer, Inc. Macintosh II.

NIC Technology, Inc. (408) 980-9511 CT-6280 For IBM Personal Computer XT and compatibles. Includes memory to bring from 0K to 640K bytes.

CT-8380
A 4M-byte Letus/Intel/Microsoft
Expended Memory Specification
card for AT and comparibles.

CT-8080A A 3M-byte memory expan for the AT and compatibles. Open Mac Enterprises, Inc. (415) 682-0440

RAM Plus 2, RAM Plus 4 Adds 2M or 4M bytes of memory, respectively, to Apple Computer, Inc. Macintosh Plus. RAM II, RAM II Plus II RAM II adds 2.5M bytes of memory to Mac Plun or SE. RAM II Plus adds 4M, 5M or 8M bytes of memory to Mac Plus, II or SE.

Adds 2M bytes of memory to Mac II.

PC Tech, Inc. (612) 345-4555 4 Megger, 16 Megger Offers up to 4M or 16M bytes, respectively, of expanded memory to IBM Personal Computer, XT, AT

Profit Systems, Inc. (313) 647-5010 Elite 16 512K to 16M bytes on Intel Corp. 80286- and 80386-based micros.

Quadram Corp. (404) 923-6666 Liberty-PC, Liberty-AT Liberty-PC differs up to 2M bytes expansion to IBM Personal Comput-ry, XT and compatibles. Liberty-AT offers 4M bytes to AT and compati-

Memory expansion to 3.5M I with two 1M-byte boards for A

Expanded Quadboard Memory expandable to 384K to for XT and compatibles.

Silver Quadboard RAM expandable in 64K-byte is ments to 640K bytes. ort RAM Memory expansion to 384K byt

STB Systems, Inc. (214) 234-8750 Grand Byte
For IBM Personal Computer AT
high-speed compatibles. Maza
expansion 2.5M bytes.

Rapid RAM 2) For IBM Personal System/2 Mc 50 and 60. Memory can be con-tional extended or expanded.

Super Mac Technology Corp (415) 964-8884 Enhance Adds 2M bytes of spirmory to A Computer, Inc. Macintosh S12K Super RAM II, Super RAM I Adds 1M to 2M or 2M to 4M b of memory, respectively, to

Tandy Corp. (817) 390-3700 Tandy Memory Exp

A board for Tandy 4000. Co with 2M bytes memory, upgrad to 4M or 8M bytes. Tecmar, Inc. (216) 349-1009 Micro RAM, Micro RAM + 2 Adds 512K- to 8M-byte memory pansion to IBM Personal Syste Models 50, 60 and 80. M

RAM +2 expandable of 512K or 2M bytes. ndable in increme Total Systems Integration,

Inc. (503) 345-7395 TSI-206S Adds 1M-byte memory to Ap Computer, Inc. Macintosh Phys. 128K-512K, 128K to 1M by

Upgrade Adds up to 512K or 1M byte mer ry, respectively, to Mac 128K.

Vissyn Corp. ompupro Di 415) 786-09 RAM 22, 23, 24 Static RAM boards that so cessors up to 10 MHz. RAM 22 cessors up to 10 MHz. RAM 22 dressable on 256K-byte boundars RAM 23 on 64K-byte boundars RAM 24 on 1M-byte boundars

# Accelerator boards

COMPANY	MODUCE	NO SHOW	MCROPROCESSOR	WORKS WITH/REPLACES	CLOCK SPRED (MHZ)	PREFORMANCE	HISTALLATION METHOD	PULL SUPPORT FOR COPROCESSORS	SACLUDES NUMBRIC COPROCESSOR	DEDICATED BANDOM-ACCESS MEMORY	AMOUNT AND TYPE OF DEDICATED RAM	SOFTWARE COMPATEMENTY	WARRANTY OFFIRED	BIRD
L. L. Architecte, Bec. 1	304 Honoring Search	MKKKII	-	-	20	THE .	-	-	Optimal	Sec	THE SALE SALE	700	-	80.166- \$17,900
n selu Pauli Austr	2 K 5 TO		1 2	300	200	-	- 1		1. 2		IZK	13	- Park	16
American Computer and Peripheral, Inc. (714) 545-2004	386 Turbo	IRON 206 AT or compatibles	80386	Replaces	12, 16 (Souther the	300%	Page	Ter	-	No	NA .	None	One-year, parts and labor	\$1,199
Acr., Inc. (\$17) 800-4403	Montac 386	MKK#		-	AM	-	Per	Tie.	-	100	10.	-	Tropic,	\$1,506- \$2,196
The same	w 1.		F 29	1220	1000	1 25	-	-	-	1		池	ma If a	-
Applied Reasoning Corp. (617) 492-0700	PC-Elevator	BM PC, PC ET, AT and commetité	80386	Works with	16	500% 1,500%	Page	Yer	Optional	Yes	1M byte (es-	None	One-year on	\$1,995
	_	Outpaces	]			-					parcadic)		days on entirent, parts	
	PC-Elevator 28	BM PC, PC XT, AT and compacitio	80286	Works with	8, 10, 12.5	300% 1,200%	Page .	Yes	Optional	Yes	1M byte les-	None	One-year on bardware, 90	\$995-\$1.7
													days on antivant	
DEGI CHERELE,	CATTON	THE REAL PROPERTY.	1 5 3		30	200		1	-	-	Upw160	1	-	\$1,465
Dove Computer Corp.	Mar from 1990	Marietrei SE	F4020	Total and	men.	1.23	Des	Ter .	Ontined	No.	NA.	-	13.	1000
Dove Computer Corp. (800) 622-7627	Mac Seep 020 SE	-		-	-	250%- 1,000%	-	-	-	-	_	-	90 days. complete replacement or	1
	Max Seep 000	Macretosh Plus, 5125	68020	Peris with	16	250%- 1,000%	Seap-on	Tes	Optional	No	KA	None	90 days.	\$999
		BAKITAT-	-			-							neplacement or	
Everer Systems, Inc. (410 490-1111 Georral Computer Corp. (617) 890-0880	Stypencharger 020	Macroson SE	64020	Works with	16	400%	Page	Ye	Optional	Vecen	136K	Neer	Charges, parts and labor 50 days, parts and labor	8999-SL4
	020				Million			1		to version	SDEC		and leber	
1000 534-2377	Mr. No.	MICAT-	-	200					į.		Sh market Sh byte DBAM		parts and labor	
200	Interest State	SMIR. PCTT.	order .	Deplete	16	I MOTO	Page	T-	Optimal	Ter	IM hope City and	New	Pro-year.	1005 1005
ALC: N	10.40	Company Plan. Thirdy 1200 IIID	-19	2.			2	8	- 4				14.	
412) 882-6700	Turbonez	EBM PC, PC KT, AT or compatibles	8085-1	Septions	9.54	300%	Pages, dip	le.	Optional	No	NA	Note	One year, replacements offered	\$150
Loves Corp. 8191457-3011	Profig Series	Macintonia 1500, GLZ, Plus, SZ	60000	- 10	36	1,00%	Propinsion Of the State	-	- 1	Tea	IN byte-Cill bytes with co-	Nest	10 days on-	\$1,690- \$3,600
LSE Electronica 516) 931-1670	XT 12 MHz V20 Metherhouse	BM PCXT	¥20	Replaces	12	500%	Lepton	Yes	Optowni	No.	NA NA	Nere	One-year, parts and labor	\$165
	Netherboard	Name of Street	-	_	26	1000	nother heard	T-	-	Ter	Chi-layten	_	Pull, mar-year	
9001 963-3636	Seed.	- 300		-	132	-				_	100	=	-	(village
	Tuberna	or Machinet Fig.	58000	Septem	36	100%	Comm	-	Opensed	Ser	Plants 312 or	-	Pall me-year	\$1,490 (without
		100 97	1			1	- 6	-		100	best to the		3.	1
-		- 100	₹								Shope Shope	1	do	
Kac Peak Systems, Inc. 512) 327-3211	Orion	Macintonth SE	68020	Replaces	16	400%	SEha	Tes	Tes	Tes	Up to 256K bytes; 1M- or 4M- byte 50MM	Neac	Full, one-year warranty	\$795
	Onon 25	Macintoni SE	68030	Repisces	25	300%	SE bus	Ta	Yes	Yes	SINON Up to 254K	None	Fell. one-year	Information
				1							Up to 256K bytes; 1M- or 4M-byte SIMM		wented	ner become
Separate Corp.	Af Tiete -		<b>XA</b> 1-	-	6125	50%-13%	Pagis	74	Optional	No.	KA	New	Two year.	\$154.96
	Af Tiete Switch II PCAT Turbs Switch	BM PC PC RT	NA 1-	-	612.5	30%-73% 50%-73%	Page	Tes	Optional	No No	NA.	Name	Two year.  manay-back parentee Two year, manay-back	\$154.96 \$154.96

Dysamic random-access memory. Single in-line memory module

The companies included in this chart responded to a recent telephone survey conducted by Computerworld. Further product information is available from the vendors.

DECEMBER 14, 1987

COMPUTERWORLD

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### Communication Networks '88

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Consulting This intensive, one-day seminar in structs you on planning issues for integrating packet, circuit, and mel switching: SNA and X.25; and voice and data in a corporate network strategy. You will address the role ISDN will play, as well as

rprise-wide networking and dwidth-intensive applications.

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Attend this butorial for a comov hensive overview of today's LAN environments. Discussion will include how to tie diverse and often incompatible network elements together in a manageable, logical way, as well as attematives to LAVis Level: Advanced.

ISDN: STANDARDS, PRODUCTS AND SERVICES s G. Herman, Independent Consultant, and

James G. Herman. Independent Consultant, and Many Jehnesten, Serior Consultant, Telecommunications Consulting Group at BBN. ISSN a first approaching. Some say with too little agreement on incumental standards and applications. Altered this highly boused, cations, Altered this highly boused, and the same statement of the standard standards and applications. Altered this highly boused, caronic, successes, products and valves offerings that will emerge service offerings that will emerge

over the next several years

4 MULTIVENDOR NETWORK MANAGEMENT my McDowell, Vice President, Vanquard Enroll in this intensive tutorial for



skills in how to manage a network which links multiple carriers and a variety of hardware and software vendors in one corporate network You will learn how to take control into your own hands and avoid finger pointing, acrimony and poor service. Level: Intermediate

HOW TO BECOME A BETTER TELECOMMUNICATIONS MANAGER aid P. Ryan, President, Connections Telecommunications Inc.

Today's network manager must not only understand new technologies and standards, but must also play many roles in the compa-ny. Attend this instructive tutorial for an entertaining and thoughtprovoking look at what you no

to know to be a successful network manager, plus the tools, pro-ses, and organization that will maximize your et. ficiency Level: Intermediate.

T-6 THE LATEST LOOK AT NETWORK STANDARDS AND OSI Richard designding, Director of Technology R8

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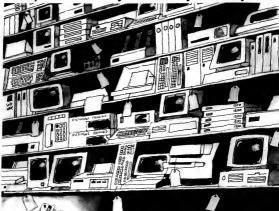
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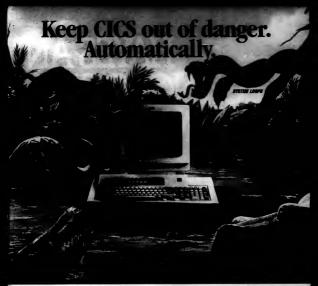
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#### Bennett

CONTINUED FROM PAGE 105

advent of DB2 caused many user comnies to defer purchase decisions until they had tested IBM's latest entry in the data base derby.

'We could have survived as an independent company, but we would not be as strong as we are today." Bennett says of the acquisition, one of the most significant moves by a regional Bell holding company way to fund a company when expenses are growing at 30% to 40% and revenue growth is only at 15% to 20%. ennett, a World War II air force miot

convince the world to buy software," be and graduate of the University of Virginrecalls. "The problem was that it was

ia, joined ADR in 1966 as a manager of op-erations and marketing at the behest of a friend. Dick Jones, the firm's second president. At the time, ADR was a small pro fessional services company that did pro-

gramming and consulting for the overnment and large commercial users. The company had already decided it wanted to be a systems software firm, but it needed a strong marketing push. To help get ADR quickly off the mark. Bennett used the sales and marketing expenence he had gained at the former Burroughs Corp., then Sperry Corp.'s Univac division, and Collins Radio, now a tele communications subsidiary of Rockwell International Corp. "My first job was to

hard to convice people to buy something that you couldn't see or own In 1970, Bennett replaced his frient ones as president and chief executive of ficer. It was a landmark year for ADR. The firm reached an out-of-court agree ment with IBM on a suit it had filed chareing that IBM's bundling of software with hardware resulted in unfair advanta The agreement followed a similar U.S. Department of Justice decision and result-

ed in an undisclosed financial payment. With those funds and proceeds from the sale of ADR's service bureau, timesharing and turnkey systems busin mett was able to put the firm's financial house in order and focus the company on what it did best - systems software The firm developed products like Librari

an and acquired two companies, including Datacom, Inc., the firm that developed

the kernel for its Datacom/DB DBMS.

Observers credit Requett with trans forming ADR from a small company ob sessed with technology into a world-class competitor. "Like any company formed at that stage in the industry, ADR was sunded by technically oriented entre neurs," Broadview's Goldstein says. "He brought professional management and organization to the company. Those skills were needed." Others, however, say Bennett was a smooth salesman who cultivated strong customer relations but did little of the strategic planning and man-

agement of the company. Bennett says he feels that, with the backing of Ameritech and recent en-hancements to Datacom/DB and Ideal, its applications development product [CW, Sept. 21], ADR is well positioned for the future. "The groundwork has been done," he says. "I doet 'feel I'm leaving any customers holding the bag."

# Martin

CONTINUED FROM PAGE 105

waiting to happen, but few, if any, U.S. ies are eager to pounce Although nearly every compatible

maker is reportedly developing a PS/2 Micro Channel clone, they all are waiting for the other pay to make the first move Nobody wants to incur the wrath of IBM, which has made it quite clear that it did not appreciate losing all that PC market share and that its new, highly proprietary boxes will be guarded as fiercely as the recipe for Coca-Cola.

Several of the offshore firms, little known here but well-funded back home, are potentially strong enough to take a hit from IBM, if necessary. At any rate, a lawsuit from Goliath IBM is bound to be tied up in litigation for quite some time Meanwhile, there's the chance to be first to market — always the name of the PC game — grab some headines and inre game — gras some resumes assume crease market share in the country that counts. Why would a Compaq, which is cleaning up on the current DOS-standard micro environment that IBM made pos-

sible, want to take that risk? Clearly, IBM will peed a certain r ber of PS/2 compatibles out there to help perpetuate what it hopes will be the new microcomputing standard. Even IBM

can't do that by itself. In the meanting is it possible that companies such as Mul titech and Mitac can establish a strong foothold in the PS/2 market to the detriment of overly cautious U.S. compan that waited too long on the sidelines?

These questions and more could easi-ly be cleared up if IBM would outline precisely what its plans are as far as litiga-tion and patent licensing are concerned IBM's silence is godlike, omnipotent and disturbing. It's also excellent compo-

itive strategy. But in this era of huge trade deficits and increasing "Buy Ameri can" stitudes, U.S. companies need to make a collaborative effort to keep as much of the U.S. market to themselves much of the U.S. market to themselves as possible. If IBM inadvertently enables offshore companies to gain further in-roads into the battered U.S. economy, its clever posture of silence could ultimately be met with a few angry voices.

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Widespread use of document exchange bodes well for versatile MIS pros

BY PATRICIA TAYLOR What do U.S. voicing, ordering and payment, Wheatman says. These experts are coming from both the inforthe retail industry, transporta-

They are all implementing sions of electronic data interge (EDI) — a set of com ons standards that allow ess to be conducted elec-

The promulgation of EDI and acceptance by many leading reporations in creating a defor MIS professionals ned in the data communica-is and business skills necessary to implement industry-spe-

Crossing boundaries
Because EDI crosses all the
boundaries of a business — requiring MIS support as well accoperation from line managers
— it can become a very political
issue. The tank involves organizational challenges as well as

workshie son technical ones, says consultant Victor Wheatman of Input, Inc. in Mountain View, Calif. universal EDI systems using the universal EDI system, according to Bob Parks and Kent Feiler of Interchange Systems, Inc. in Chicago. To accomplish this Much as the current wave of

veloped as more and more com-panies installed PCs. EDI ext, an MIS professional must bine elements of his inforperts are evolving as their companies turn to electronic in-

The advantage these professionals possess is that since EM is based on ANSI standards, their knowledge of the area will be transportable from one company to another, significantly enhancing their career opportuni-

Unlike other information sys-tems standards, EDI is not part of the regular curricula that make up most MIS education programs. This lack of structured training means that the de-veloping field is wide open to recoping held is wide open to newcomers who can learn what they need to know by attending industry-specific seminars, of-fered by EDI standards organisa-tions like the Transportation ons like the Transportation ata Coordinating Committee in fashington, D.C.

The EDI expert on for communication across systems using the for the project, spokes Carol King says. These professionals in

ition systems staff as well as an outside consulting firm. The project proved so successful that Pirst Chicago is now mar-keting its EDI software as a septe product. The staff, origi used in one of the bank onal areas, is now part of

N THREE TO FOUR YEARS, the EDI standards will be common knowledge. It will be like knowing Cobol."

IOHN KANE ROCKWELL INTERNATIONAL CORP.

which is developed using a for-mat specific to EDI, to address business applications such as business applications such as purchasing, accounts receivable

d accounts payable. The software programs usu ally run on existing computer systems. Although a basic underngy and ANSI X.12 stan EDI into already existing appli-cation areas. An ideal candidate for an EDI-related position will

the First National Bank of ago, which implemented in November 1985, drew on resional talent from all the

n use next regical step in its communications, Feiler and irks say, and professionals who are wen versed in the syntax was be able to compare themselves to business travelers who have mastered the English language wa. a less universal dialect.

ree to four years, the EDI will be come e," says John Ka "It will be like

ues orders and sends

part of the automotive industry's wt to im nent electronic ment ex staff is required on the clerica side of the company, Kane's de-

Kane sees the need for EDI pertise as a short-term phe-menon. "It's relatively new. so understanding EDI standa is a plus for information syste professionals today," be asys.

The mystery disappears But once people develop sufficient overall communication d busi standards by themselvies will not oblige a company to bire an EDG expert, Kane says. "There is a not a whole lot of mystery to the standards," be adds. "A good analyst can understand them."

Another way MIS profession-size of the standards."

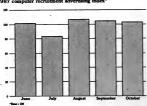
als can develop a career b EDI is by going to work for a vendor of EDI products or be-coming an independent consulming an independent at in the field. A nu in the best. A number of panies, including McDonnel glas Corp, IBM and GE In-sation Services, a division of eral Electric Co., offer prod-that conform to EDI stan-

According to a recent study by Input, the market for EDI activare and services will grow from \$50 million this year to more than \$1 billion by 1990.

for the Study of Data Processing at

# CAREER INDEX

1987 computer recruitment advertising index\*



October 1987 computer recruitment advertising activity\*





- UNIX OPERATING SYSTEM SPECIALIST for Lionel Singer Corporation - Sydney.
- CAD SYSTEMS SPECIALIST for vertical market software - Sydney.
- HARDWARE ENGINEER for Pyramid Technology Australia -
- SALES EXECUTIVES to sell Pyramid Technology based solutions - Sydney and Melbourne.
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jorn Nordemo is Vice President of Data Arts & Sciences, Inc. (DASI), a contract software agency based in Weston, MA. Although they place people in permanent positions. DASI most

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Computer world has a spenius better that the spenius programmers is broad reach — aron MSCPP directors to computer programmers. In the white read multiple markets — and flad's what IAAS needs "We hard true specific positions for MS/DP consultants that we needed to bill in northern New England. We used the local newspaper on a week basis, but people who are willing to move usually aren't reading the local Standay paper. So, I fell this was a perfect apportunity to by Computerwork!" says Bjorn.

According to Spon, he's quite satisfied with the results. "From Computerworld, we filled 75% (3 out of 4) of the positions with the responses from the first week, and the remaining position with the response from the following week. These results alone made my acts in Computerworld worthwhile:"

warminum. And firm also recognities a second benefit to advertising in Computer-world. The beauty of using Computerworld is that it's read by people in the computer inclusive who have a need for consultant, as well as being read by consultants who need to keep up to date on the mainsplace. Supplier. So we not only read qualited crandicistics to all our current operatings, but we are creating awareness of the services that DAST has to offer. Sup 8 flow.

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Roger Prouncain is Stall Director for Lochman Associates, inc. (July of Welman Hillinos it is one of the largued privately held computer systems software consulting and development firms in the United States. And Roger is pleased to report that plans call for continuing the 50% annual growth every year for the next five years.

Roger is also pleased with Computerworld's contributions to the company's growth. When he needs qualified people to fill positions as the company grows, he turns to Computerworld.

"Computerworld is the only national publication that we routinely advertise in." says Roger. "Last year we determined that we needed consistent national exposure. We chose Computerworld, which gave us exactly that Simply put. Computerworld delivers just what we're looking for top-quality job applicants."

"Whe got about 30 responses per ad, and what really counts is that those responses yield at least two quality applicants per ad." Roger explains. "Overall, a higher percentage of quality people respond to our ads in Computerwork, as opposed to what other publications deliver. Computerwork works for us."

Plus, Roger has found added incentive to advertise in Computerworld: "The same ad that runs nationally in Computerworld costs twice as much to run in the Chicago Tribune, a local newspaper," he notes.

Since LAI began advertising in Computerworld, the company has gone from 50 to 130 full-time professionals. "We've been in Computerworld about every other week. And with the company's plans for growth for the next five years, we've going to continue advertising in Computerworld." Says Roger.

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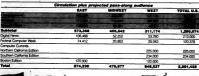
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COMPUTERWORLD

**DECEMBER 14, 1987** 

# Announcing...Computerworld Product Classified MARKETPLACE

# Premiering in Computerworld's Forecast '88 Issue

Issue Date: December 28/January 4

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- Used Equipment Hardware Software Communications
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### Take advantage of related editorial.

When our readers turn to Computer-world's MARKETPLACE, they'll also find related editorial in the Used Equip-ment and Training categories. Plus— the Financial/Business Services section

# Save money with our early-bird discounts. To help you get your product classified advertising off to a good start in 1988, we're making you two money-saving

FREE second color in your ad—when you advertise in Computer-world's December 28/January 4 Product Classified MARKETPLACE.
(That's also our attention-getting Forecast '86 issue') Note: Be sure to request second color on enclosed

FREE inch for every two inches you run in Computerworld's MARKET-PLACE during the entire first quart of 1988. Bonus inches are based on and added to each insertion.

# Put the improved MARKETPLACE to work for you - in one of three easy ways:\*

· Return the enclosed order form with your ad material in the postage-paid

- envelope provided.
- Send your ad material by taking ad-vantage of our telecopier service. In Massachusetts call (617) 879-0700,

# ext. 739 or 740; outside of Massachu-setts call (800) 343-6474, ext. 739 or

For more information, call one of the following Computerworld MARKET-PLACE sales offices: Boston (617) 620-7758 or 7759

New Jersey (201) 967-1350, ext. 409 \*You must complete and return the enclosed advertising contract in or-der to receive your frequency rate.

# Computerworld Product Classified MARKETPLACE Frequency Discount Rates

(applies to ads totaling four column raches or more.) 13x 51x Cost per mn inch \$185.00 \$176.00 \$170.00 \$165.00 \$157.00

### Mechanical Requirements

Number of Columns	Width	Minimum Depth
1	1-13/16"	r
2	3-3/16"	r
3	5-13/16"	r
4	7-13/16"	2"
5	9.13/16"	7

\* Ad depth mass are available in 1/2" increments. Camera-ready art or negatives are pre

ferred. Negatives must be right reading, emulsion side down. 85-100 line screen

Copy: Typesetting available at no extra charge. Please attach clean typewritten copy, with approximately 25 words to a nn inch, not including headlines or border artwork. Any special artwork ald be enclosed with your copy. Logos must be submitted on white bond namer for best reproduction

Shipping Instructions: Send all copy. Shipping Imservances Sens as copy, artwork and insertion orders to: Computerworld MARKETPLACE, 375 Cochituate Rd., Box 9171, Framingham,

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# Issue & Closing Dates Computerworld is published every Mon-day; ad space and material closing date for the Product Classified MARKET-PLACE is Friday, 10 days prior to

### Rates Open Rate:

\$185 per column inch. Minimum ad as accepted for Computerworld Product Classified MARKETPLACE is 2 colum

# Frequency Discount

To earn frequency discount rates, a Computerworld Product Classified MARKETPLACE contract must be signed and returned to your sales repre sentative or the Computerworld Billing Department in Pramingham, MA. If a contract is not submitted, all Comput world MARKETPLACE ads will be ed at the open rate of \$185.00 per column inch.

All advertising space is contracted for a one year time period — effective from date contract is signed.

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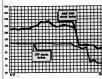


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Leasing Companies	83.6	79.8
Composite Index	74.0	74.1
S&P 500 Index	95.2	97.4









# Computerworld Stock Trading Summary













# India rubber

Many blue chippers rebound nicely; Unisys, Wang stay flat

tor macha, despite a late network.

Activation and the state of the st

# Sun needs prep time for OS

BY JULIE PITTA

MOUNTAIN VIEW, Calif. -Sun Microsystems, Inc. users are eagerly awaiting a new operating system for the Sun-3 and Sun-4 workstations, a version

ar's end. According to John Hime, m's hardware marketing direc-Sun's hardware marketing direc-tor, SunOS Version 4.0 will not be available to users for anot seven to eight months. Hime said Sun had told sele

ed customers of SunOS 4.0's pending release. However, Sun velopers have discovered that "there's a lot more work to ge these new features into the OS."

'Nudging' Sun Sun received some gentle criti-

cism from customers at a gather-ing last week of Sun users in San Jose, Calif. "It's been more like nutging," said R. Miles Waugh, nager of the computer appli-ons division for Philip Morris U.S.A. "It's not gotten to the point where people are saying will switch There's a lot of loyalty for Sun out there

John Kinyon, engineering oup leader for Motorola, Inc.'s Cellular Group, said criticism may stem more from a desire to have the latest whiz-bong capues than from a need. "I've got enough to keep me say right now." Kinyon said. "I suspect we will have Version 4.0 up and running before a lot of ap-plications will be ready. But, like everyme else me con't wait

pecifics locking un's Hime declined ed to offer m

cifics on the new operating sys-tem, saying that it has not been formally announced. Since Nov. 30, SunOS 3.2 has been available on the Sun-4 workstation, which an shipping in recent ths. No beta-test versions of mOS 4.0 have been shipped

me added. Rich Edwards, an industry as ephens, said SunOS Version gence" with AT&T's Unix Sys-tem V, Release 3.

Users said they are impatient to get their hands on the new onerating system. Tm always anxious to get

the latest and greatest operating system," said Jim Forger, a sysms engineer for Eastman Ko-k Co. "But if it's not out by the spring, 178 start running into

# Dexpo vendors mad as wet hens

Some exhibitors chafe after being put in outdoor rain-soaked tent

BY JAMES A. MARTIN

ANAHEIM, Calif. - Several third-party Digital Equipment Corp.-compatible vendors were surprised and angered last week to find that their Dexpo West '87 booth space was not located on a conventional trade show floor but inside a rain-sosked tent in a

were told our space would be in Hall B, a temporary ture, and of course we as structure, and or course we as-sumed that meant some kind of climate-controlled building," said a Convex Computer Corp. spokesman who asked not to be identified. Of those exhibitors inter-

"Our C1 XP super minicom puter is an expensive piece of equipment to be running on water in a parking lot," the Convex spokesman said

A rainstorm swept through Southern California Dec. 4 and S, just before and at times during some 200 exhibitors' efforts to set up for Dexpo in makeshift ex-labition space outside the Dis-neyland Hotel here. The tent structures housed more than two-thirds of all the Dexpo ex-

The waterlogged situation was apparently aggravated later by cleamap crews, whose efforts to sweep away standing rooftop rainwater actually caused more water to seep onto the show viewed, none reported actual computer equipment damage, but they did not rule out the pos-

Because of the rains and leak ing rooftop, some exhibitors said the costs of convention setup were doubled.

"Normal setup costs are around \$5,000 to \$6,000, but

around \$5,000 to \$6,000, but with the expense of drying our booth out, protecting it from the rain, the labor in moving our computer equipment and the un-expected costs of a botel suite, it will cost us around \$10,000 to said Lynn Neff, manager of trade shows for inforSoftware, Inc.

New exhibitors this year booth space would be in a tent. Steven Barth, vice-president of Steven Barth, vice-president of marketing for Dexpo organiser Expocossal International, Inc., said there had been some misun-derstandings about Expocon-sal's description of the booth space as a "semirigid temporary structure."

"Technically, it's not a tent od we didn't call it one. But a lor of people didn't know what it would be because of that descrip-tion," Barth said.

Next year's Dexpo West will also be held in Anaheim and will again require a temporary struc-ture to house exhibits, Barth said. Plans have already been made to contract for the same tent structure again next year, but modifications will be made to sure that this year's problems

Lotus sues

ad firm over

trade secrets

Microsoft blows whistle

CAMBRIDGE, Mass. — Lotus Development Corp. filed suit against a Boston advertising agency Friday, alleging that the farm offered "to sell Lotus's

trade secrets and confidential in-

formation" to Lotus rival Micro-

According to Lotus, the Bos

ton-based advertising agency Rossin Greenberg Seronick and Hill, Inc. attempted to get the

Microsoft advertising account by offering confidential Lotus in-formation. But instead of using

on alleged offer

soft Corp.

# Ada's commercial course accelerates with intros

BY ROSEMARY HAMILTON

BOSTON - The Ada program ming language took some small steps into the commercial market last week with the help of a stream vendors at Ada Expo '87. nce and trade show

Two data base management ndors, including Oracle Corp., nounced interfaces to the Ada environment. At least two vendors, including Alsys, Inc., intro-duced Ada products for Apple Computer, Inc.'s Macintosh and d they would target the offerings at commercial customers. Ada's move into the comme

cial arena has long been expect ed by some observers, but it has yet to meet some users' expecta Christened as the standard

programming language by the U.S. Department of Defense

m certain overseas markets, incitating Europe Ada um a nea lease on life when the DOD reemphasized its commitment to the language earlier this year. We have been expecting it to spread in the [U.S.] commer cial market, but there was little indication of it there," said con-

ultant Kenneth Bosomworth at the Ada Exposhow Bosomworth, president of International Research Development in Norwalk, Conn., said his firm has been tracking Ada's growth in Europe. He summed up Ada's presence in the U.S. commercial market by saying, It just ign't hannening here

ward Berard, an Ada advocate who served on the Executive Committee of Ada Expo. said he remains confident that the language will be accepted one day by traditional data pro-There's no doubt it will be a

gradual introduction" to DP shops, said Berard, who is presi-dent of EVB Software Engineering, Inc. in Frederick, Md. "But it is making small inroads. Announcements made last rock at the show included the

following:

Oracle released Pro Ada, a pro gram that reportedly allows us-ers to embed SQL statements into programs written in Ada. With the SQL statements, the Ada programs can access the Orment system. Pro Ada will run on Digital Equipment Corp. hardware. It requires DEC's Ada compiler and Version 5.1 of the Oracle DBMS.

 Computer Corporation of America said it is shipping an in-terface that links the Ada envi-ronment to its Model 204 relational DBMS. The interface will allow Ada programs to directly access and retrieve data. It is set to be available in January as a free feature of Model 204. • Rational, a Mountain View, Calif.-based company that makes an Ada development system, an-nounced it will jointly market its

4381 and 9370 platforms.

Although the amount of pay-ment was not disclosed, disk drive industry analyst James

Porter speculated that it may be

the information against Lotus Microsoft gave copies of an incriminating letter and an explanstory brochure to I otus "Intimately acquainted" In the brochure sent to Microsoft's director of corporate con munications, the agency alleged-ly wrote, "The reason we know so much about Lotus is that ne of our newest employees just spent the past year and a half working on the Lotus business at

"So they are intimately ac ainted with Lotus's thoughts out Microsoft," the brochure

Lotus also named James Mambro and Jay Williams in the suit. Both are former employees of Lotus's advertising agency, Leonard Monshan Saabye in Providence, R.L., who now work Rossin officials were unavail

ment at press time. Lotus sought injunctive relief

# Rodime settles one 31/2-in, drive suit

BY CLINTON WILDER

GLENROTHES, Scotland -The backlog of lawsuits lodged by Rodime PLC against various sufacturers involving 31/2-in. ik drive technology patents was reduced by one last week me and market leader Mini-te Corp. reached an out-ofcourt settlement in a lawsuit filed by Rodime.

Rodime's suits against IBM and Conner Peripherals are still pending. In each of the three ac-tions, Rodime has claimed that it

pology and that other vendors ng it must license the technol ogy from Rodime ICW, March 2. March 30, June 22]. Rodime also mailed written warnings to apnately 20 other wodors sserting similar claims.

Longmont, Colo.-based Mini-scribe agreed to pay Rodane for a license, which includes a cross ficense under each of the company's existing patents. Both companies refused to disclose specifically what technology Rodime will be licensing. The firms will continue to compete in the

This suit has had very low credibility in the industry," said Porter, president of Disk/Trend, Inc., a research and consulting firm in Mountain View, Calif

"Rodine is essentially claiming a patent on making a disk drive smaller. This [settlement] sounds to me like an attempt by both companies to cut down their legal bills."

# VAX

CONTINUED FROM PAGE 1

ird-party DEC-compatible ade show held here last week. The new VAX system's in-eased performance will come-om a combination of software and symmetrical multiple pro-cessing, which is the ability to asign one application to each of several processors. No pricing details were given, and Demmer would say only that the next VAX 8000 system would be red before the end of DEC's

VAX crystal buil Although Demmer did not elabo-rate on Polar Star, he did sketch out DEC's intentions for the VAX family and VMS operating system during the rest of the 1980s and early 1990s.

For example, Demmer said, DEC is developing a distributed systems architecture to be imsystems architecture to be im-plemented by the early 1990s that will support a maltiversidor environment and feature the In-ternational Standards Organisa-tion a Open Systems Intercon-nect (OSI) metworking standard as a major component. OSI will be incorporated at the operating system level, Demmer said. This will be sub-IDC waterest as IDC and the IDC waterest and IDC and IDC waterest will enable DEC systems to offer simplified interfaces to other op-erating systems, including Mierating systems, including Mi-crosoft Corp. 's MS-DOS and OS/ 2 and AT & T's Unix System V. Demmer said DEC's VMS oprating system will be "only one lement of the future distributed

ystems architecture we are at-empting to define." He said the biggest change in the works for the VAX environuse works nor the VAX environ-ment is increasing the current 32-bit memory addressing limi-tations. By the early 1990s, DEC hopes to go beyond the VAX's 32-bit ceiling with an expanded systems architecture.

Denmer would not say exact-ly how the expansion would be achieved. He said DEC currently has two reduced instruction set has two reduced instruction set computing (RISC) projects mov-ing through research and devel-opment. "We're not at the point where RISC will provide any-thing better than VAX, but we limitations of the 32-bit struc-ture." he said.

as not certain."

In the meantime, DEC is experimenting with vector processing capabilities. "We have a 64-processor Microwax range on a single but, but the real question is, What applications will lend themselves to parallel processing." Denmer said.

He said there ware no immediate the processing of the processing

cessing?" Demmer said.

He said there were no immediate plans for vector or parallel processing abitties but added that DEC believes the potential "is so enormous that we are nding a lot of R&D dollars on

Lukewarm reception
Users interviewed at the Dexp

terest in Polar Star.

"I guess it is a good idea for DEC to offer something like a mainframe if they want to get BBM's customers, but most of us bought DEC because the departmental system is what worked best," said the director of computal, who asked not to be identified.

Leonard Hermanth, audio-Leonard Herzmark, public Leonard Hermatra, public-health engineer for the Maricopa County Department of Health in Phoenix, said that although a mainframe system would be of interest to his particular de-partment, it would be to the

partment, it would be to the county hospital as a whole.

"The question arises of would we stay with departmental system or go with distributed comparing by departments. We would probably stay away from minisframes, athough other arceas within our organization need to move to inriger and larger equipment, "Hermant's said.

The concerned of multivariety The concept of multivendor mectivity through the DEC

appealing to users.
"If we could access other sys-tems through the operating sys-tem and not have to add all sorts of networks and software, it would certainly make things eas-ier," Herzmark said. "Every time you add more software, it

# DEC dangles key to VAXBI lock

Ill it or won't it open the VAXIBP
Only DEC knows for sure.
With the answer to that question still uncertain, Digital Equipment Corp.'s prospictary VAXIBI
bus was the smain topic of discussion during
Deapo West '87 and the Digital Equipment
Corp, Unters Society users group meetings held
concurrently here has wood.

Corp. Users Society users group meetings held concurrently here last week. Users also prodded DBC to improve its abilities to manage chatters as, "to connect to non-DBC machines. The VAXBI bas, used in the VAX 8000 series, is the only DBC bas not generally available for third-party development. DBC chooses which third-party products are sold for the

WAXBL
Some users said last week they would not consider a WAX 8000 series model because of the limits imposed by DEC. Others, however, and they believed DEC would eventually feel enough pressure from users and third-party wendom to finense its WAXBL bus more freely.

High hopes
"There have been a lot of comments about the
Bl bus this week, but I'm not really worried
about it, because I think DEC will change its
stance in the not-too-distant future." said Robert Byers, director of computing services for Jackson Community College in Jackson, Mich. Opening up the VAXBI bus to outside devel Upening up the VAXBI bus to outside development is an ongoing discussion at DEC, but the company has no definite plants to change its policies, according to Bill Demmer, vice-president of DEC's Md-Range Systems Business Group in Borbners, Mass

rthwhile alternatives.
"When there's a problem with a third-pripheral on DEC (hardware), you somet persipheral on DEC, [hardware], you sometunes don't get much sympathy from either side," said William Bergstrom, a programmer/handyst for the U.S. Air Force in Tucson, Aris. The aupport from the third party is not always very good, and DEC is not very forgiving when you've brught a competitor's product metend of

Clusters and competibility
One user said be would like to see DEC provide

in a house VMS release.
"The way it is now, we have to set up each of our VAX 8600s so they can talk to each other. Each machine use his own system parameters and is booted differently, and you have to make save they don't conflict with each other," and John L. Meler, a computer scientist with Computer Sciences Corp. in San Diego.
"VMS needs more of a cluster concept."

Meler added.

Better compatibility with non-VAX systems, especially the Apple Computer, Inc. Macintosh, in also on users' Carletons lists.

One user said be would like to see DEC and Apple join together in a joint development project that would benefit those customers who use

while DEC and Apple management feel peetty good about each other, there is no specific activity for a joint development between the two at this time," Denmer said.

JAMES A. MARTIN

# Real-time offerings get another boost

MARLBORO, Mass. — Digi-tal Equipment Corp. last week ing capabilities by enhancing its VaxELN software and packaging the 3-month-old Vaxetation 3500 with its Vax-

lab offerings.

VaxELN Version 3.0 supports three new runtime systems — the Microvax 3500. tems — the Microvax 3500 the Microvax 3600 and the VAX 8800 — and include

DEC eshanood the Vindish Deta Acquisition and Analysis systems to include apport for DEC Q-bus-based Microrax agreems. The vendor said device dependent resistance and device device

plications can be migrated be-tween Q-bus- and DEC VAXBI-based configurations with little or no reprogram-

mag.
Enhancements to DEC's
Vardab Scientific Workstation
family include support for serial I/O and an IEEE 488 bus and

The base price for a Vaxiab/ Vaxetation 3500 is \$62,000. Base prices for VaxELN Ver-sion 3.0 software, including tool kit and runtime licenser range from \$1,470 for a Var station 2000 Toolkit and a M crovax II Runtime system to \$14,600 for a Vaxetation 2000 Toolkit and a VAX 8800 Run-

# Feds require PCs for disabled WASHINGTON, D.C. - Guide-

lines to ensure that federal em-ployees with disabilities can use personal computers and other office automation equipment were announced last week by the U.S. General Services Adminis-

The guidelines, developed by the GSA and the U.S. Depart-ment of Education, are intended for use by managers at federal agencies and to show wendors

The guidelines call for large print displays for users with poor vision and cursors with an adjust able "blink rate" to accommo ders who may be sensitive to ders who may be sensitive to certain frequencies of stashing light. With the increasing impor-tance of screen graphics, the document asid, the government eventually will require that "acreen information can be ex-tracted, interpreted and pre-sented in speech or tactile form"



### TRENDS

# Application backlogs

Application hose kings me fring shows at HSM OS mainframe sites search of miss in located as some and a search of miss in located as some and miss in located as some and a search of miss in located as some

In a survey of top data processing managers. Focus Research, Inc. found that the application backlog has shrunk at many large mainframe sites during the last three years and is greater than 36 months at only 14.1% of the sites, compared with 20.5% three years are

sites, compared was three years ago.

The same held true for DOS sites, which tend to have less so-phisticated users and are equipped with smaller mainfrantes than shops running

In DOS shops, 7.1% reported a backlog of more than 36 months, compared with 15.2% three years ago. Almost 60% said their backlog is less than 12 months, compared with only 47.2% in 1984.

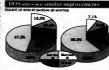
Focus spokenman John Cook could not pinpoint why the hacklog is shrinking, but conversations with DP directors suggested two reasons: the practice of buying applications commercially and the fact that the use of development tools, such as fourth-generation languages, is more without pro-

generation insignages, in more widespread. In a related portion of the survey, the West Hartford, Cons., market researchers found that CASE took are most prevalent in the sites with the largest backlogs, which would seem to indicate that submaced development took the survey of the construction case the backlogs. However, Code pointed out had CASE took tend to be in two

ing to try out new technology.

Because they already have the biggest backlog, they are trying out the tools, "Cook noted.

CHARLES BABCOCK



CASE tools favored in backlogged shops



Excelerator is top CASE draw



INSIDE LINES

"Frunct Bay, buddy, wannes hop some METS<sup>11</sup> I'EM makes no server of a finishe for the same however or stands no state of a finishe for the same however or when insteads to the other state of the same of the sa

Awast, ye swabbies! ADAPSO in lobbying the U.S. government to reopen its Section 301 trude case against South Koreas regarding software pieze. The investigation was naupended last year when Korea promised to grotest ord-ware rights, but ADAPSO says the Koreas provenment has failed to publish the necessary regulations and has failed to atop the sales of printed outware manuals.

Rushing into print. Unitys and printer manufacturer Delphar Systems are expected to amounce an OEM deal today under which Unitys will sell Delphar's 8000-2 ion printer as the Unitys B8275 for use with Unitys 81 and Veries systems. Delphar, which claims the three-year contract may be worth \$50 million, uniet the B9275 will be rated at 75 mere-from.

Requisitable Revent Role Provided Deckir Pologies And Art, manular certifical condition in the Termon (GMI) Me mortis Respiral in a result of a private pine accident flow concurs Hove, 20, Probogies and his fight interactor were returning from Sim Deeps where a Thankspring visit with Pologies and the Termon Memorial Reposit appears on the Common Comm

Bet potate. Executom Systems, a developer of financial pinning and decision-support enforces, is on the author pinning and decision-support enforces, in on the author Technology, which copied Execution Ray 1956, is believed to be close to disposing other Auton. Tecas, software compare, Technology-self Execution, which reportably has revenue to conserved all Execution, which reportably has revenue to conserved a Execution, which reportably has revenue to conserve of \$200 million, was cone conselected to compare to the contract of \$200 million, was cone conselected to contract the contract of \$200 million, was cone conselected to compare the contract of \$200 million, was cone conselected to contract the contract of \$200 million and \$200 million

Shooting for the stars. Despite not having formally sonounced its product, Stellar Computer in Newton, Mass., has a backing of orders of between \$1.7 and \$3 million for its planned \$100,000 personal graphics supercomputer, sccording to Stellar Pounder and Chairman J. William Pobaskin Sr. Poduska said the backing should sugar well for the startman.

Network management king? IBM is apparently grooming Part. a VM high—level programming language, an Netvice specification of the process of the process of the transfer of the process of the process of the process of the state high-level language and tool. The worker has the X.\* IBM network management product marketing market Robert Basiley tool. Computerword recently. This is in response to user demand for me easier tool than IBM's C. List that could be used to taller Netwice software to individual airs needs. Basiley also indicated that the language will become part of IBM's SAM.

Why not the rest? Ameritech is considering whether to enter the computer leasing business via sequisition. If it decides to make such a move, the Chizago-based from will follow a trail bizard by fellow regional holding companies Bell Atlantic and Bell South. Ameritech is the purent of mainframe data base developer Applied Data Research. There's a new player in town.



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